



**ASCI**

Agriculture Skill Council of India

# Participant Handbook

Sector  
**Agriculture and Allied**

Sub-Sector  
**Agriculture and allied activity**

Occupation  
**Livestock Health Management**

Reference ID: **AGR/Q4804**



## Animal Health Worker

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**Shri Narendra Modi**  
Prime Minister of India

“ Skilling is building a better India.  
If we have to move India towards  
development then Skill Development  
should be our mission. ”



## Certificate

### COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**AGRICULTURE SECTOR SKILL COUNCIL**

for

### SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: 'Animal Health Worker' QP No. 'AGR/Q4804 NSQF Level 3'

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Authorised Signatory  
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It is expected that this publication would meet the complete requirements of QP/NOS based training delivery, we welcome the suggestions from users, Industry experts and other stakeholders for any improvement in future.

## About this book

An Animal Health Worker also known as Community Animal Health Worker / Community Resource Person (Veterinary ) or Livestock Service Provider is a person selected from his/her own community to provide a set of "Minor Veterinary services" required for a given job role as per the provision of Indian Veterinary Council Act ( No.52 of 1984 ). He / she works under indirect or distant supervision of registered veterinarian, under over-all monitoring of any registered development / private / producer led agency. An Animal Health Worker should have a mind for science, belongingness to the community, compassion for animals, good leadership, and communication and observation skills. He / she should be physically strong and have manual dexterity to perform on the job. The trainee will enhance his/her knowledge under the guidance of the trainer in the following skills:

- **Knowledge and Understanding:** Adequate operational knowledge and understanding to perform the required task
- **Performance Criteria:** Gain the required skills through hands on training and perform the required operations within the specified standards
- **Professional Skills:** Ability to make operational decisions pertaining to the area of work.

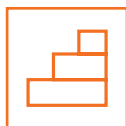
The handbook incorporates well-defined roles for preventive health care, assistance in contagious disease control and basic first aid services to farm animal and poultry, mostly in the outdoor setting. The participant should be result oriented and responsible for his/her own working and learning. The participant should also be able to demonstrate skills of using various tools and decision making for instant problem solving.

We wishes all the best for your future in the Animal Husbandry Sector

## Symbols Used



Key Learning  
Outcomes



Steps



Time



Tips



Notes



Unit  
Objectives



Exercise

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# 1. Introduction

Unit 1.1 – Rural Livelihood and livestock farming

Unit 1.2 – Knowing your village

Unit 1.3 – Role and responsibility of animal health worker

Unit 1.4 – Continuous learning and support system.



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Understand the meaning of livelihood
2. Discuss the importance of livestock and poultry farming in rural livelihood.
3. Better understand institutions and resources of your village.
4. Understand the role and responsibility of Animal Health Worker
5. Understand the importance of continuous learning and identify referral support system.

## UNIT 1.1: Rural Livelihood and Livestock farming

### Unit Objectives



At the end of this unit, you will be able to:

- Understand the meaning of 'livelihood'
- Learn definitions and discuss the importance of livestock and poultry farming in rural livelihood

### 1.1.1 What is livelihood?

Your livelihood is the job you work at to earn the income that supports you

In simple word it is a way of earning money in order to live..



*Fig 1.1.1 Rural Livelihood and Livestock farming*

*Photo credit: vethelplineindia.co.in*

*How can one improve his or her livelihood or livelihood of someone?*

**In technical terms, Livelihood is defined as Capabilities, Assets and Activities that people utilizes to earn living. (DFID,2000). You can remember this by expressing it as 'livelihood equation'.**

$$\text{Livelihood} = \text{Capabilities} + \text{Assets} + \text{Activities}$$

This means, one need to focus on following to improve his or her livelihood or livelihood of people in general.

- A.Capabilities
- B.Assets
- C.Activities

Capability of a person means 'capping' or powering the abilities of a person. Abilities includes physical abilities, mental abilities and skills. A person becomes capable of doing something only when he or she is able and there is proper environment or support e.g. Access to finance, access to market, road connectivity etc. Fig- 1 indicates various components of capabilities.



*Fig 1.1.1 Understanding Capabilities (Note: Skill is an integral part of capabilities)*

Things which are 'Assets' have value for the owner because they can be converted into cash.

Can you name the key assets of a livestock farmer?

.....

A thing that a person or group does for a particular purpose is called 'Activity'



Can you name some activities shown in this postal stamp?

.....

.....

*Refreshing our learning on abilities....*

Check following pictures and name different abilities:



.....



.....



What is the skill of the women in above picture?

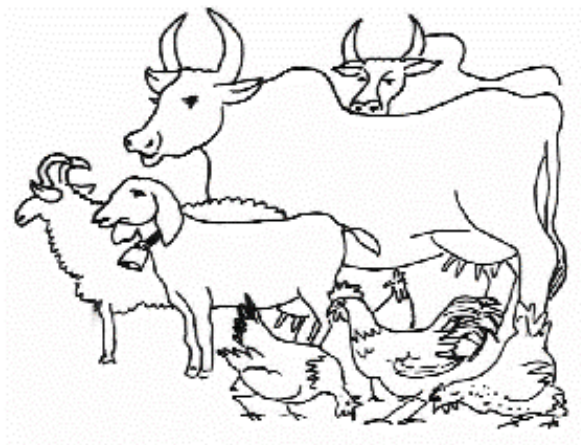
.....

Can you name her asset as shown in this picture?

.....

Can you now link Skill development to livelihood?

### 1.1.2 The Livestock and livelihood



*Fig 1.1.2 The Livestock and livelihood*

Livestock can be defined as useful animals kept on a farm. Livestock are raised for profit or conservation of rare breeds. Livestock gives us food (e.g. milk, meat), fiber (e.g. wool), leather, fertilizer (e.g. manure) and/or labor (e.g. Animal Traction).

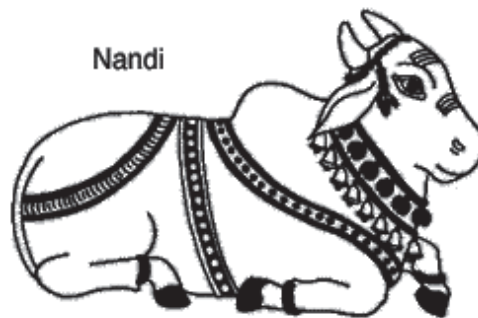
The term poultry is used to specifically describe domesticated birds reared for egg, meat, feathers and sometime as pet also. Species of poultry includes: Chicken, Quails, Turkey, domesticated ducks, domestic geese, guinea fowl and pigeons etc.

Livestock in India includes: Cattle, Buffalo, Sheep, Goat, Pig, Horses & Ponies, Mules, Donkeys, Camels, Rabbits, Mithun and Yak.



*Fig 1.1.2 A herd of sheep near Indo-Nepal border (Photo credit: vethelplineindia.co.in)*

Livestock are important part of Indian culture and mythology.



*Fig 1.1.2 Nandi - the gatekeeper of Shiva and Parvati in Hindu mythology*

Livestock and poultry provides livelihood to two-third of rural community in India.



*Fig 1.1.2 Mrs Kumariamamma of Kerala with her backyard poultry (photo credit: kvkcard.org)*

#### **Do you know?**

- ✓ India stands First in the total buffalo population in the world and second in the population of cattle and goats.
- ✓ India is the second largest egg producer and third largest broiler chicken producer in the world
- ✓ India has 30 recognized breeds of cattle, 15 of buffaloes, 42 of sheep, 20 of goats, 8 of horses and 18 of poultry.
- ✓ As high as 70% of livestock in India, is owned by 67% of small, marginal and landless farmers. Sixty percent of labor of livestock rearing in India is provided by women and more than 90% of work related to care of animals is rendered by womenfolk and children of the family.



*Fig 1.1.2 Cow dung cake used as fuel for cooking in Indian villages (Source: Flickr Credit: Andrew Turner)*



*Fig 1.1.2 Land leveling in rice fields using draught animals (Photo credit: CRR)*

NB: You can refer Internet to learn more on contribution of livestock and poultry to Indian economy.  
*Class work:*

List products and by-products obtained from livestock and poultry.

## Exercise



1. List the various livestock as Big ruminants, Small ruminants, Monogastrics and Camelids

Answer: -----

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2. Identify the difference between ruminants and monogastric livestock

Answer: -----

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## Tips

1. The learning from this unit can be interesting if you look for answers of following questions:
  - How knowledge of the village you are serving can help you support the livelihood of people? *(Refer technical definition of livelihood and types of resources in village)*
  - How can knowledge of crop calendar and village festivities help your work as animal health worker? *(Refer role of Animal Health Worker)*
  - Why is skill development important to support livelihood? *(Refer components of capabilities and live hood equation)*
  - *What should I do to support the livelihood of a livestock farmer? (Refer livelihood equation)*
2. Always try to attend and participate in meetings of various village level institutions. Your opinion can help village leaders to plan and implement project for livestock sector improvement.
3. Always access the 'Need' and 'Resources' within a village or service areas before suggesting any program for livestock farmers.

## Notes

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## UNIT 1.2: Knowing your village

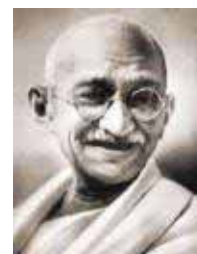
### Unit Objectives



**At the end of this unit, you will be able to:**

- Understand institutions and resources of your village

### 1.2.1 Knowing your village



The future of India lies in its villages  
-Mahatma Gandhi

The soul of India lives in its villages. India, having an agro-based economy, depends the most on its villages for growth.

As an animal health worker, you will serve livestock farmers mostly in village setting. It is important for you to learn following about the village you are serving.

- Resources of the village.
- Village and community institutions and their activities.
- Village administration.
- The society and its composition, norms and believes
- Major economic activities in the village.
- Common agricultural practices, crop calendar and farming systems.
- Festivities
- Preferences of livestock species and specific food habits.
- Climatic conditions and environment related issues affecting the village.

#### **What are the different type of resources?**

Resources in a village can be divided into:

- Natural Resources E.g. Land, Water etc.
- Man-made resources or assets of the village E.g. A hospital, connecting road
- Physical and mental abilities of people within the village.
- Skills of the people within the village.

## Exercise



1. Discuss about functioning of local self-government e.g. *Panchayat / village council* in your area.

Answer: -----

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2. What is sustainable development? Discuss the key environmental issues e.g. Water shortage,  
Climate change

Answer: -----

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Notes



Lined area for taking notes, enclosed in a large orange rectangular frame. The area contains 30 horizontal lines.

## UNIT 1.3: Role and responsibility of animal health worker

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand your role and responsibilities as animal health worker.

### 1.3.1 Role and responsibility of animal health worker

In India, we have shortage of government veterinarians and veterinary para-professionals. Statistics indicates that number of government veterinary personnel per square kilometer in India is 0.03652. *(Calculated from 2012 OIE and Planning Commission data)*

Moreover, as per the world bank (2007-08) statistics as high as 39% of rural people in India live beyond 2 km (typically equivalent to a 20-minute walk) of an all-season road. Veterinary services, though available in district headquarters or through government hospitals, the availability of services at the remote rural areas and at the door step of farmer is negligible.

Skilled animal health workers working in private sector or on contract with government at the village or community level itself can help in ensuring animal health care at the doorstep of farmers.

***An animal health worker supports the livelihood of a livestock farmer:***

Refer livelihood equation mentioned in unit 1.1.1.

An animal health worker helps in protecting the life and enhancing the productivity of farm animals – which are the key asset of rural farmers. They also assist in improving the 'capabilities' of farmers and work with other agencies to ensure that farming as an 'activity' remains viable.

**He / She bridges the gap between rural farmers and veterinarians and thus support government in animal disease control and livestock extension.**

**What are the specific roles of Animal Health Worker?**

- Provide preventive care to animals as per guideline of veterinarian: Implement preventive care measures e.g. vaccination, deworming, bio-security, etc.
- Provide basic first aid to animals: Understand symptom of diseases, provide care as directed by veterinarian, Cleaning and washing of wound, dressing of wound, apply ointments, first aid.
- Assist public agencies in animal disease control: Create awareness about the disease preventive measures, data collection, disease reporting, maintaining bio-security provision, prevention of risky practices, culling and disposal of animals.

- Assist in animal husbandry extension: Promotion of best practices and appropriate technologies related to farming e.g. feeding, housing, management, breeding etc.
- Assist in implementation of development programs e.g. Engagement with farmers' institutions, facilitation of marketing of farm inputs and products etc.
- Assist in animal welfare, conservation and disaster management: Prevention of animal cruelty, human animal conflict, basic of disaster management and conservation of indigenous animals.

Over 70 percent of human diseases originate in animals. Your actions as Animal Health Worker can affect human lives both positively and negatively.

Your failure to report outbreak of certain animal diseases at right time can lead to spread of such diseases not only to other animals within the locality but also in humans.

Picture 6 explains how antibiotic used in animals lead to a situation where human suffers from antibiotic resistant infections.

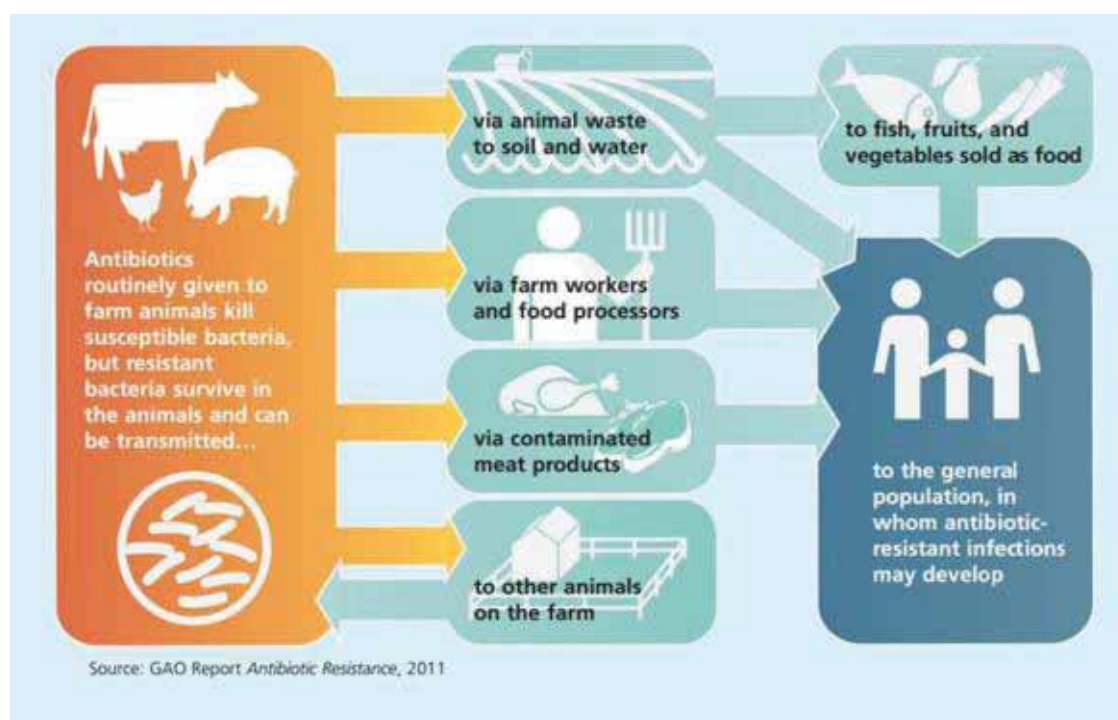


Fig 1.3.1 Problem of Antibiotic Resistance

Since animal health, contamination of livestock products and animal welfare is directly related to human health, treatment and care of livestock is a regulated activity. One need to follow laws. Following are guidelines for an animal health worker.

- Perform only those activities which is permitted by local government or notified as minor veterinary practice (MVP).
- Always seek guidance from veterinarians and follow reporting rules as directed by your organization.

- Promote preventive care and ensure early reporting of ailments by farmers.
- Never use antibiotics in animals without consulting veterinarians. Ensure completion of prescribed treatment.
- Follow government guideline on animal disease control, animal breeding and disaster preparedness.
- Keep record of client farmers and treatment administered to animals. Share such records with farmers.
- Promote animal welfare and conservation of indigenous animals.

Exercise 

1. Mention the roles and responsibilities of Animal Health Worker

Answer: -----

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Notes



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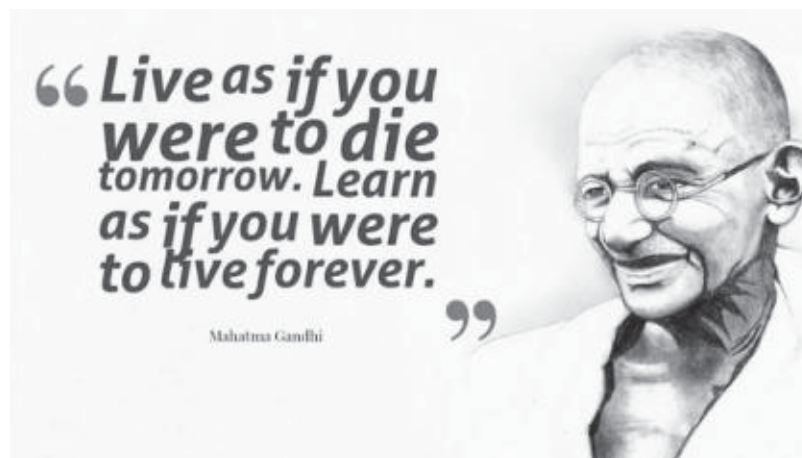
## UNIT 1.4: Continuous learning and support system for referral

### Unit Objectives

At the end of this unit, you will be able to:

- Understand the importance of continuous learning and guidance from veterinarian.
- Learn about potential institutions for seeking referral support

### 1.4.1 Continuous learning and support system for referral



There is no end to learning. As a skilled professional worker, you need to continuously look for new knowledge. Scientific discoveries and technological improvement takes place every day in the animal world. What you have learned today may be obsolete with time. Continuous learning is more important in professions where one's action is directly related to life of human beings and animals.

As an animal health worker your work will be supervised by veterinarians. When you are working alone and there are problems, you can always refer the same to the assigned veterinarian or veterinarian of nearby government hospital.

Some of the institutional facilities where you can seek technical solution of your day to day professional issues and update your knowledge includes:

- District or block level veterinary hospitals.
- Local Agri-clinic managed by practicing veterinarians.
- *Krishi Vigyan Kendra* (KVK) of your district.
- Any branch or center of State Institute of Rural Development.
- Extension centers of local agriculture or veterinary universities.
- Known facilities of NGOs.

Many of the above institutions publishes leaflets, brochures etc. on varied topics. These can be a good source of information.

Keep yourself informed about written government notices, guidelines, reporting formats etc.

It is good to collect information from websites but it is advisable to always verify the credibility of the source and discuss such information with supervising veterinarian.

Notes



Lined area for taking notes, consisting of 28 horizontal lines.



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## 2. Controlling and restraining of animals

Unit 2.1 – External body parts and organ system of farm animals.

Unit 2.2 – Understanding flight zone and point of balance

Unit 2.3 – Common behavior of farm animals

Unit 2.4 – Use of common methods and tools

Unit 2.5 - Personal safety



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Understand the meaning of livelihood
2. Discuss the importance of livestock and poultry farming in rural livelihood.
3. Better understand institutions and resources of your village.
4. Understand the role and responsibility of Animal Health Worker
5. Understand the importance of continuous learning and identify referral support system.

## UNIT 2.1: External body parts and organ system of farm animals

### Unit Objectives



At the end of this unit, you will be able to:

- Understand basic body parts of common farm animals and poultry.
- Understand the meaning of common livestock terminology.

### 2.1.1 External body parts

A basic understanding of the external body part of farm animals, internal organs, functional systems and some common terms used to describe animals is a pre-requisite for a learner before he / she can control and work with the animal.

Following are few illustrations showing external body part of various farm animals.

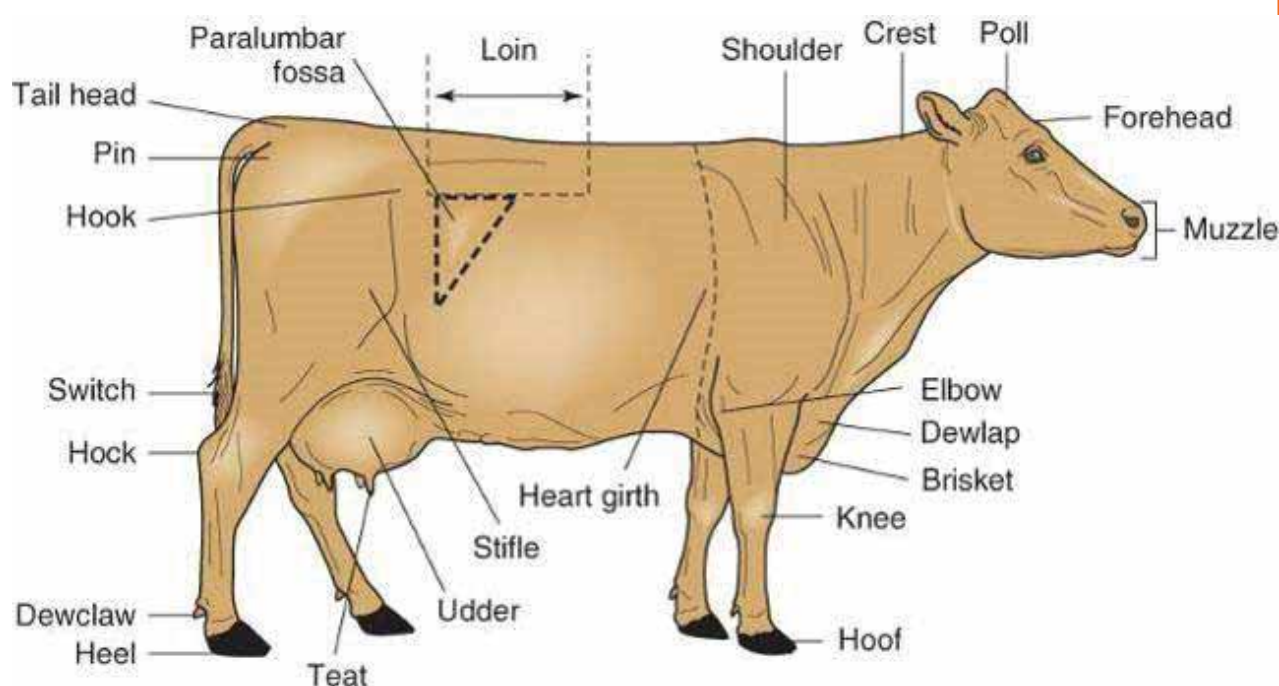


Fig 2.11 External body parts of cow\*

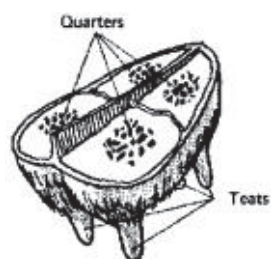


Fig 2.1 A cow udder has four quarters and

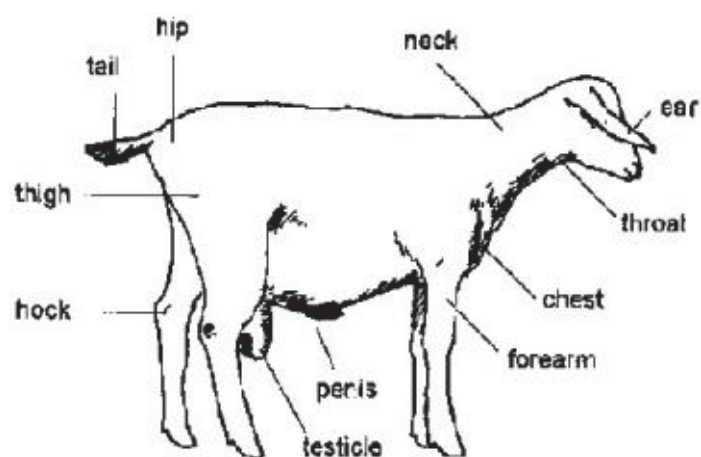


Fig 2.1 External body parts of Buck\*

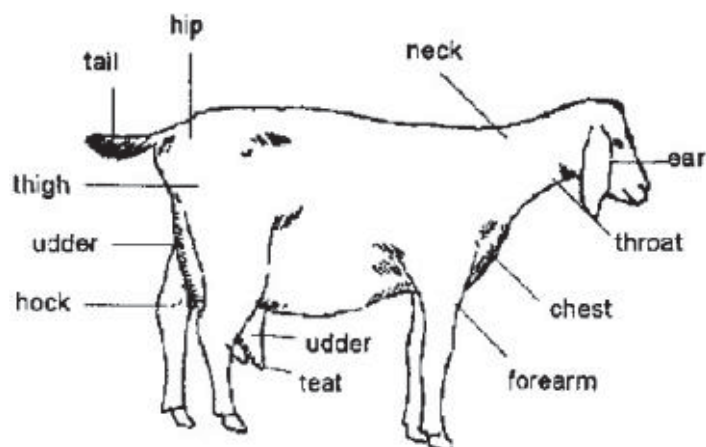


Fig 2.1 External body parts of Doe\*

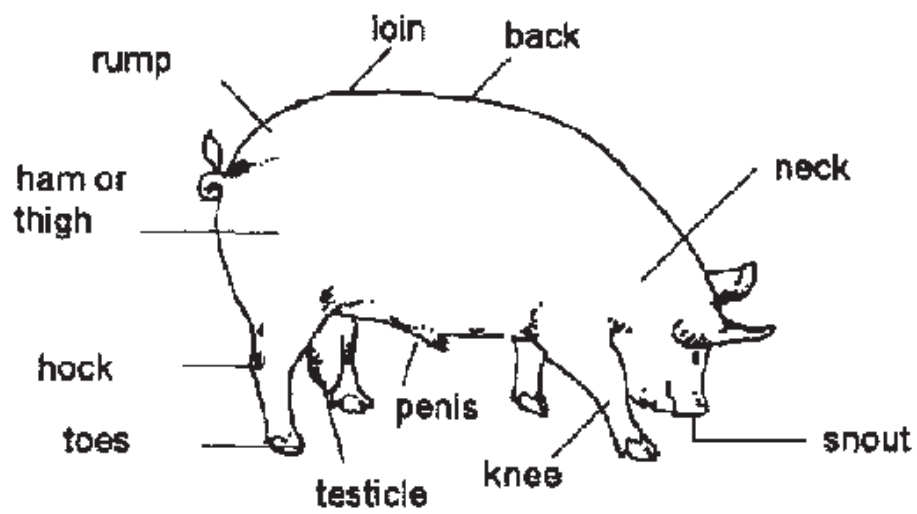


Fig 2.1 External body parts of Boar\*

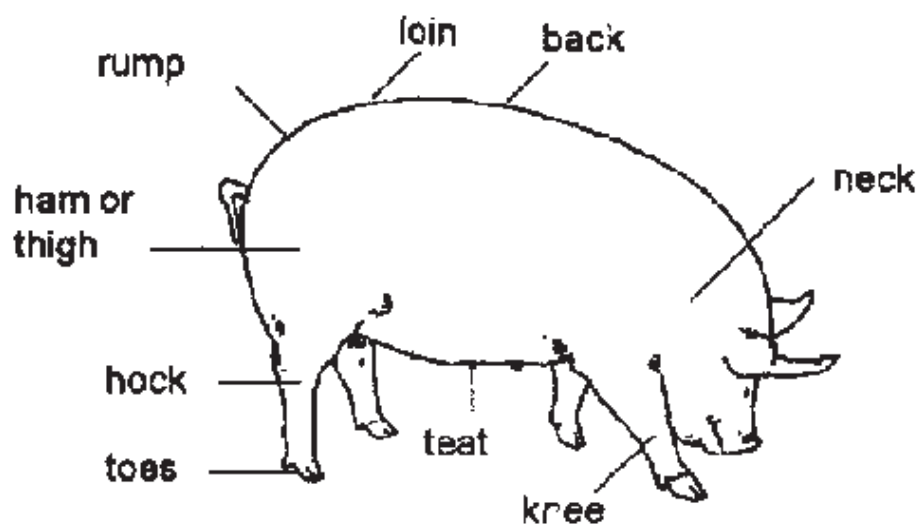


Fig 2.1 External body parts of Sow\*

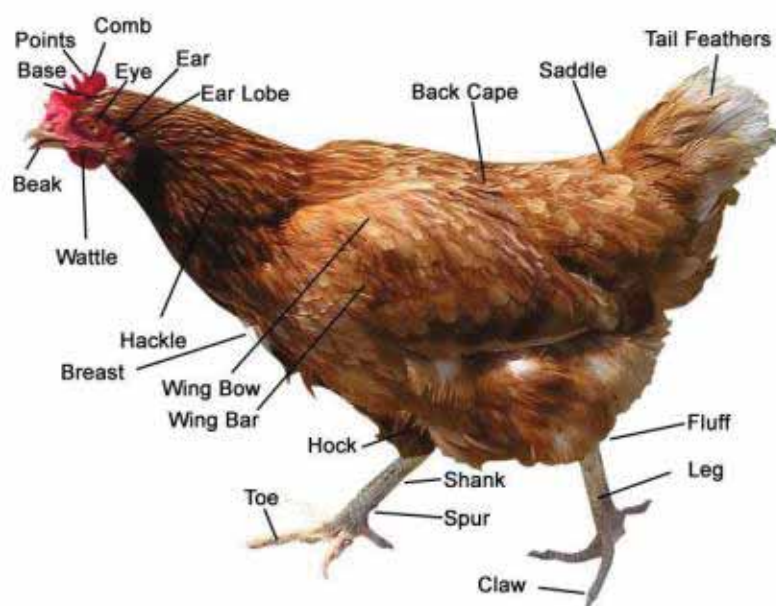


Fig 2.1 External body parts of Hen

### 2.1.2 The organ system

Just like human the body of an animal is also made up of many, many millions of cells which we cannot see unless you use a microscope. Special cells come together to make an organ.

Every organ performs special jobs. A body system consists of a number of organs which work together to carry out a special job. The 9 systems of animal body along with organs and corresponding job functions are shown in following table.

System of the Body	Organs in the Body	Job or function
Musculo-skeletal	muscle (meat) bones	Support and move the body
Digestive	stomach, liver, intestine, pancreas	Digest and absorb feed
Circulatory	heart, blood vessels	The blood carries substances around the body
Respiratory	muzzle, windpipe, lungs	Breathing
Urinary	kidneys, bladder	Get rid of poisons and waste (urine)
Nervous	brain, nerves spinal cord	Pass messages around the body, control the body
Sensory	eyes, ears, nose skin	Sense and detect things outside the body
Reproductive	testes, penis ovaries, uterus, vagina, vulva, udder	To produce and feed young
Lympho-reticular	lymph nodes, spleen	Protect against infectious diseases, produce blood

Table 2.1.2 Organ Systems in Animals

Unlike in animals there are 4 body systems in poultry: Integumentary, Respiratory, Skeletal, Digestive.

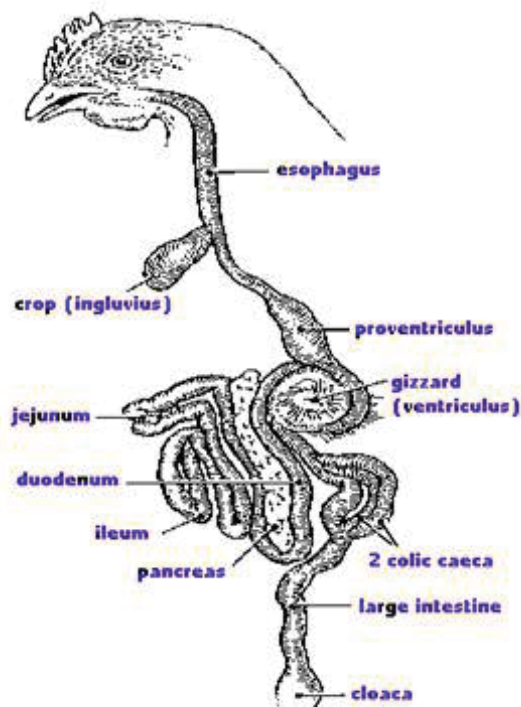


Fig 2.1.2 Digestive system in Poultry

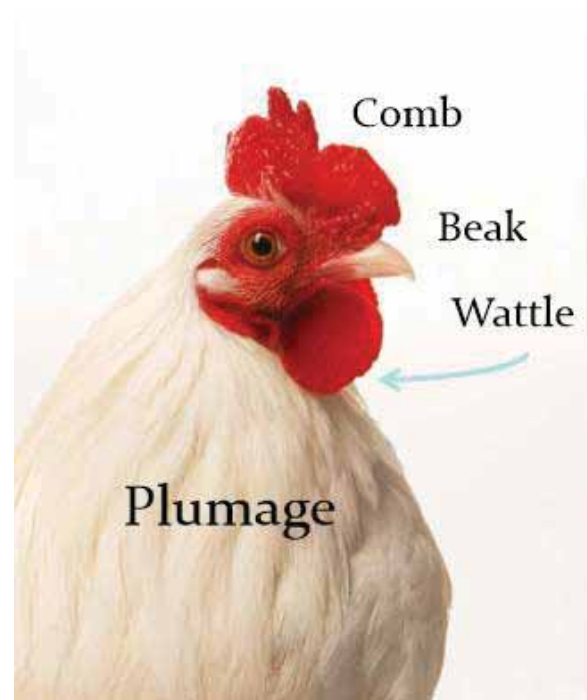


Fig2.1.2 Some parts of integumentary system of birds

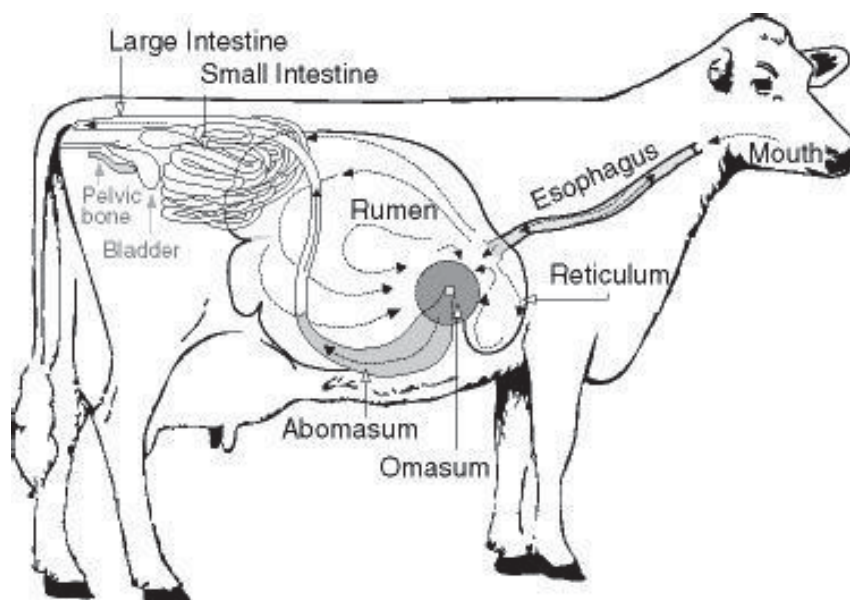
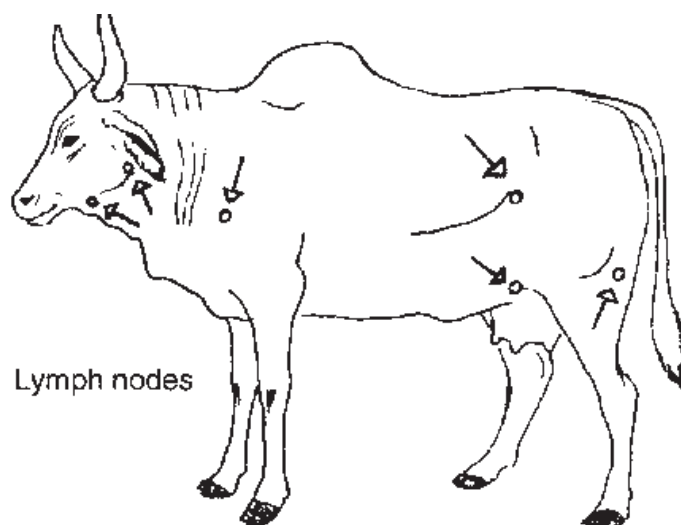
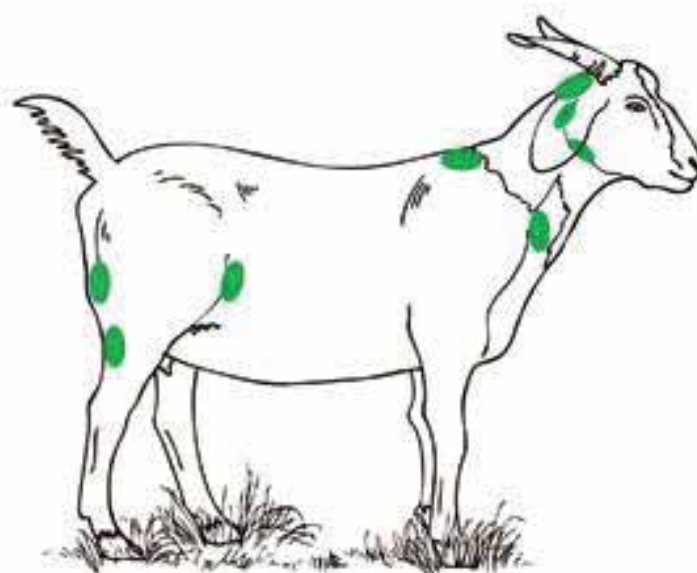


Fig2.1.2 Digestive system of cattle

As indicated in above table, lymph nodes are important part of Lympho- reticular system of animal's body which helps in protecting an animal from infectious diseases. When an animal is infected, the lymph nodes (glands) often become swollen and can be felt as lumps under the skin.



*Fig2.1.2 Location of Lymph nodes in cattle*



*Fig2.1.2 Location of lymph glands in goat (Credit: Langston University)*

## Exercise



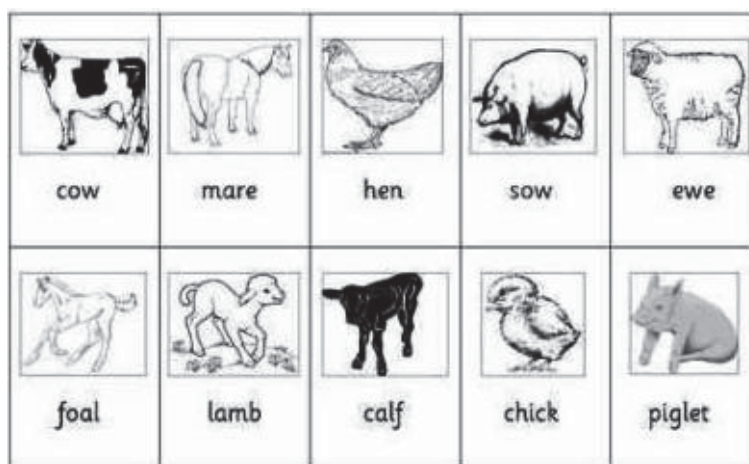
1. Refer above illustrations in this unit and discuss in group the meaning of the used terms like: Bull, Cow, Buck, Doe, Boar, Sow and Hen. You may also like to look for meaning of other common terms like: Dam, Sire, calf, Heifer, Lamb, Ram, Ewe, Kid, Gilt, Cockerel, Chick, Piglet, Pullet.

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Can you match the mother with their young ones?



2. Prepare a note on Rumen- the first chamber in the alimentary canal of ruminant animals. Describe function and importance of rumen and rumination.

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3. Take help of your instructor to practically demonstrate following along with location of prominent lymph nodes.

- Pin bone
- Tuber coxae (hook bone)
- Para lumbar fossa
- Point of shoulder
- Heart girth

You will learn about importance of above in following modules.

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4. Refer the figure of integumentary system in poultry. What is the function of wattle? What are other parts of integumentary system in poultry?

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5. Source of images: studyblue.com and The New Zealand Digital Library project, The University of Waikato and FAO

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Notes



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## UNIT 2.2: Approaching and moving animals

### Unit Objectives

At the end of this unit, you will be able to:

- Understand basic principles of animal handling.

### 2.2.1 Approaching and moving of animals

As an animal health worker you should always handle livestock in a safe, stress-free environment. The first principle of animal handling is to avoid getting the animal excited. How you approach an animal is always critical in this regard. Most large animals can see at wide angles around them, but there is a blind area directly behind their hindquarters beyond which they cannot see (Refer Fig -1). Any movement in this "blind area" will make the animal uneasy and nervous. The best way to approach is therefore from side.

Most large animals will kick in an arch beginning toward the front and moving toward the back. We should avoid this kicking region when approaching the animal (See figure 2)



*Figure 1*



*Figure 2*

*Fig 2.2.1 Approaching of animals*  
source: Farm Safety Association Inc.

The flight zone of an animal is its personal area or the area surrounding an animal that if encroached upon will cause alarm and escape behavior. Animal moves away from the things in the flight zone. Size of the flight zone is determined by tameness and degree of excitement. Sudden, deep invasion of the flight zone may cause the animal to panic. The flock of poultry also have a defined "flight zone", which determines how close a person can approach before the flock moves away. Some birds, such as turkeys, will move towards a person when they enter the pen.

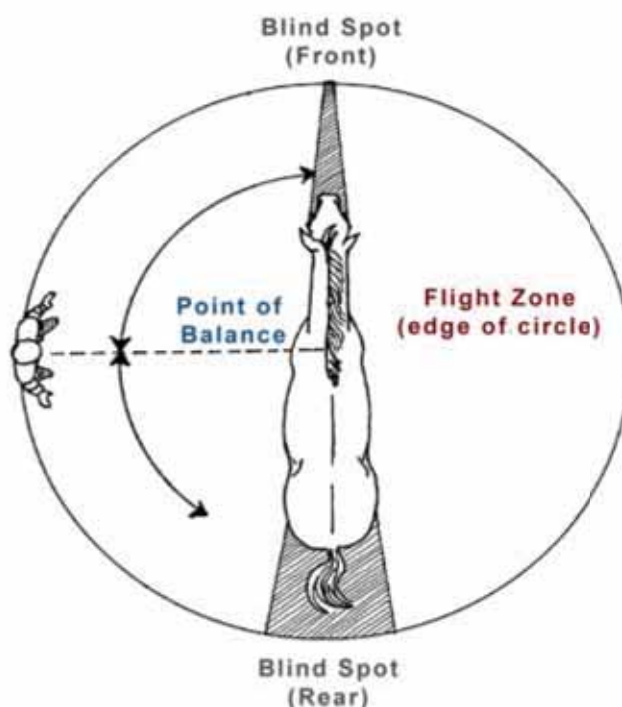


Fig 2.2.1 Blind Area

The point of balance is located behind the shoulders of each animal, depending on their angle of vision, and so in order to move the livestock forward; a handler must stand behind the point of balance. If the handler moves forward and goes in front of the point of balance, the animals will move back.

**General precautions for approach and handling of livestock:**

- When approaching an animal always speak to the animal before touching it. Avoid surprising an animal.
- Get some information about the animal from its attendant or owner, e.g. whether the animal is calm or aggressive.
- Treat strange animals with suspicion, but try not to let the animal know that you are afraid of it
- Never handle the hind quarters or hind legs without having the animal's head held and a foreleg lifted or restrained.
- Beware of the area in front of the rear leg when working with cattle. They tend to kick forward, then back. Pulling the kicking leg forward can be used as a means of preventing a kick while working in the udder or flank area range.

## Exercise



1. What is Blind aria ? Explain

Answer: -----  
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2. How to Approach The animals ?

Answer: -----  
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3. Mention The Precautions Prior Approaching and Handling of livestock ?

Answer: -----  
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Notes



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## UNIT 2.3: Common behavior of farm animals

### Unit Objectives

**At the end of this unit, you will be able to:**

- Learn about the common behavior of farm animals.

### 2.3.1 Common behavior of farm animals

Following learning related to behavior of farm animals can be of help for your day to day work as animal health worker:

- Most animals respond to calm, gentle, and consistent handling.
- Most livestock rely heavily on their senses of smell, hearing, and to a lesser extent, sight. The ears of cattle are very sensitive. They easily get stressed by loud noises. Similarly, they can be calmed by playing soothing music.
- The best way to calm cattle is by scratching under the neck and behind the ears, areas they find difficult to access.
- Farm animals are considered as social animal and their behaviors are strongly dependent on other members of the herd. It is stressful for a livestock to be removed from their herd. All Livestock become uneasy or nervous when their ordinary routines or familiar surroundings changes.
- Livestock detect people by their movement, which is much more important to animals than what is moving, or the location, color, or identity of the moving object. A handler's excited or aggressive movements may cause animals to stop and watch the activity rather than respond to the handling. Therefore, it is important to move calmly and steadily when handling animals.
- Livestock can develop individual behavior patterns such as kicking or biting. Lack of movement and close confinement is a factor that leads to behavior like licking or biting of stall equipment in cattle.
- Pig and cattle are generally colorblind and have poor depth perception. This results in an extreme sensitivity to contrasts, which may cause an animal to hesitate at shadows or rapid changes from light to dark.
- Cows also have a tendency to kick toward a side with pain from inflammation or injuries. For example, if a dairy cow is suffering from mastitis in one quarter, consider approaching her from the side of the non-affected udder.
- Livestock with young exhibit a maternal instinct. They are usually more defensive and difficult to handle. When possible, let the young stay as close to the adult as possible when handling.
- Animals respond to the way they are treated and draw upon past experiences when reacting to a situation. For example, animals that are chased, slapped, kicked, hit or frightened when young will naturally fear being approached.
- The standing and lying behavior patterns in dairy cows especially after milking may reduce the risk of udder infection. Incident of Mastitis was lower in the herd that were given fresh feed after milking both in the morning and afternoon.

NB: In corresponding modules we will learn more about other common behaviors such 'Rumination' and behavior during heat or estrous.

## Exercise



## 1. List Out The Common Behavior of Farm Animals ?

Answer: -----

This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## Tips

- Mastitis is a disease of udder in high producing dairy cattle.

## Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## UNIT 2.4: Use of common methods and tools for restraining

### Unit Objectives



At the end of this unit, you will be able to:

- Understand the use of common methods and tools for controlling and restraining of animals

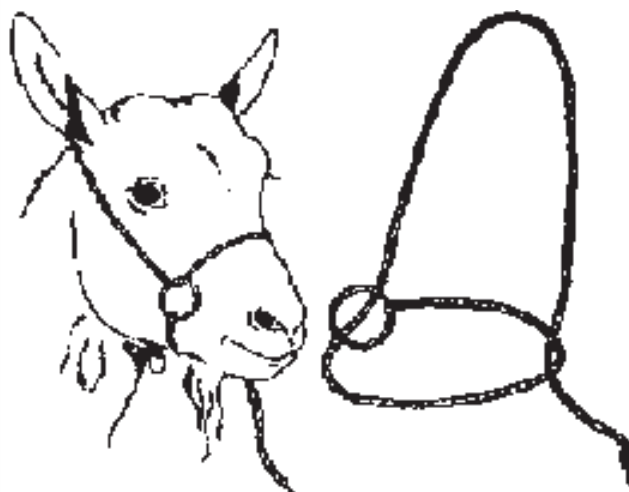
### 2.4.1 Restraining of animals

Restrain of animals in simple terms means to prevent an animal from moving. Restrain is possible both by manual or mechanical means.

#### ***Restraining large farm animals:***

There are different ways you can restrain an animal. Following pictures show some of the ways.

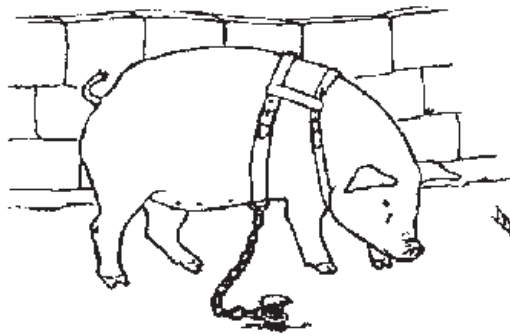
#### **Use of Rope halter / Nose snare:**



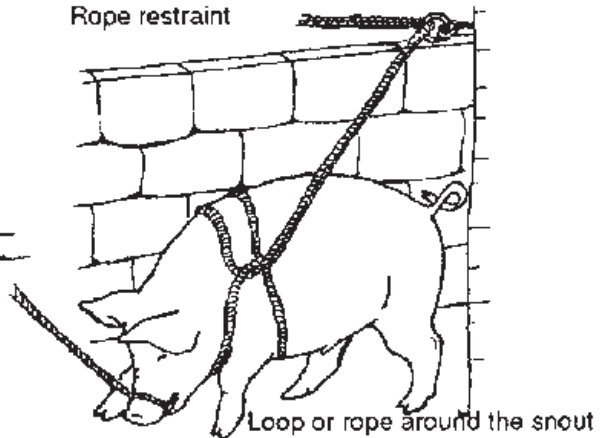
*Fig 2.4.1 Restraining of animals*

*Picture Source: enasco.com / nsdl.org*

Restraining with harness



Rope restraint



Loop or rope around the snout

Fig2.4.1 Restraining of Pigs (Source: FAO)

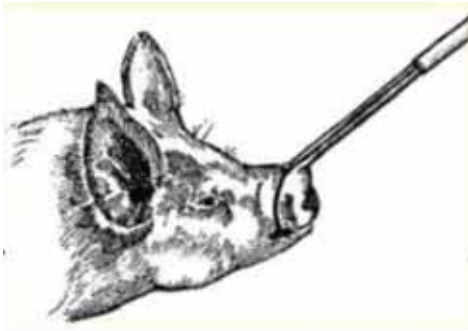


Fig2.4.1 Use of nose snare in Pig

**Leg Restrain:**

This method can be used to make a cow stand still and to avoid her kicking from hind leg. A rope is used to form a loop just above hoof. The other end of the rope passes over the shoulder where it should be held by an assistant so that it can be released quickly if the cow starts to go down. (See illustration)

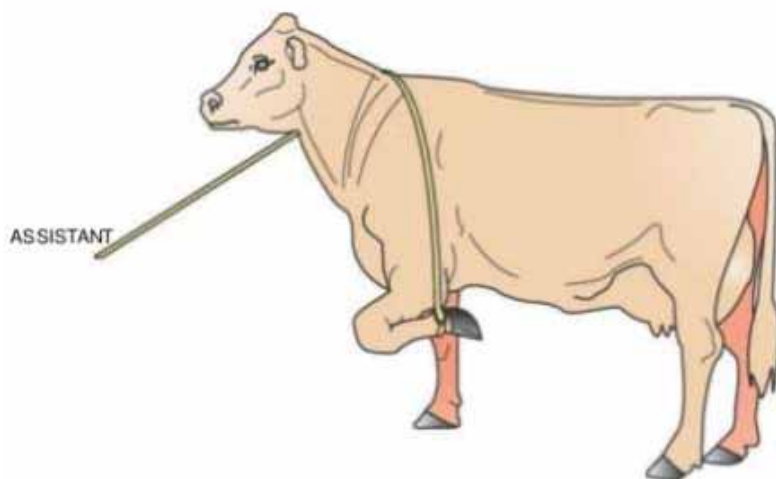
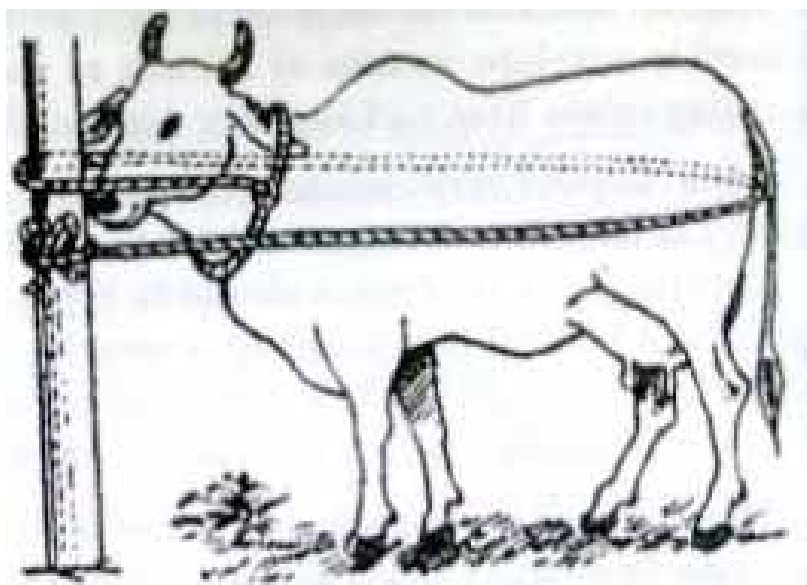


Fig2.4.1 Method of leg restrain (Source:rcvets.com)

For lifting a rear leg cow's head should be pulled to the side opposite that of the foot to be lifted. One then needs to grasp the leg just above hoof for lifting.

***Securing an animal in standing position:***

Following illustration shows restraining in standing position.



*Fig2.4.1 A simple method of restraining a cow in standing position ( Source: rcvets.com )*

In village securing a cow in standing position to a pole and keeping a cot (Charpoy) behind its buttock can help achieve moderately good control.

***Restrain by casting:***

Casting or throwing down is a process in which an animal is brought down on its side from pressure exerted on its body by a series of carefully placed and tightened ropes. Casting is more commonly done in case of cattle and buffalo.

For proper casting of large animals, one should know how to make a nonslip knot (Bowline knot). Fig 8 shows the method for making a non-slip knot or bowline knot.

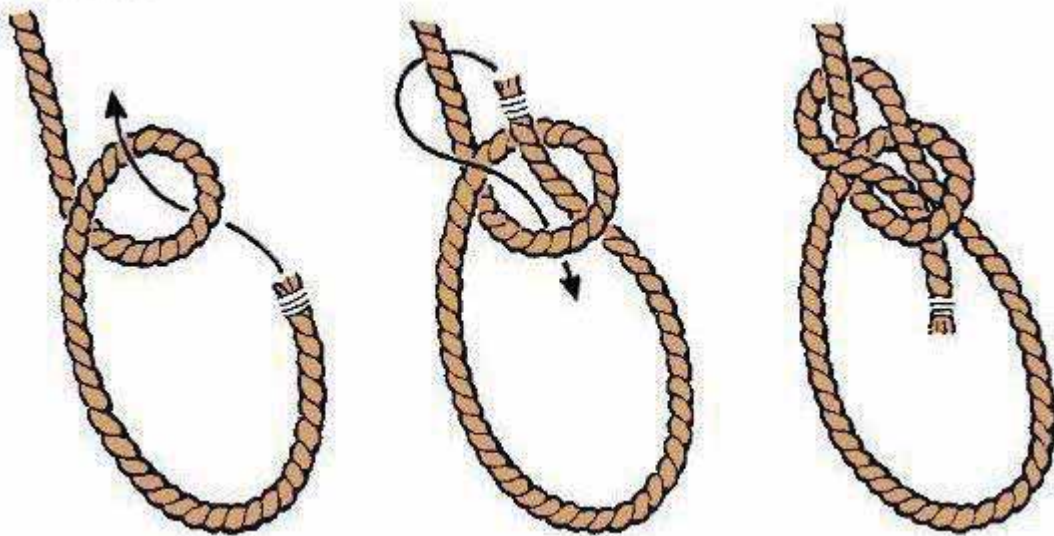


Fig2.4.1 Bowline knot (Source: Pitenrest.com)

There are different methods of casting:

- Two-loop Method or Reuff's method.
- Criss-cross method or Alternate method (or Burley method)
- Rope board casting of Pig

Your instructor will demonstrate these methods. Following illustrations simply indicates difference of the various methods. You can appreciate this after an initial demonstration.

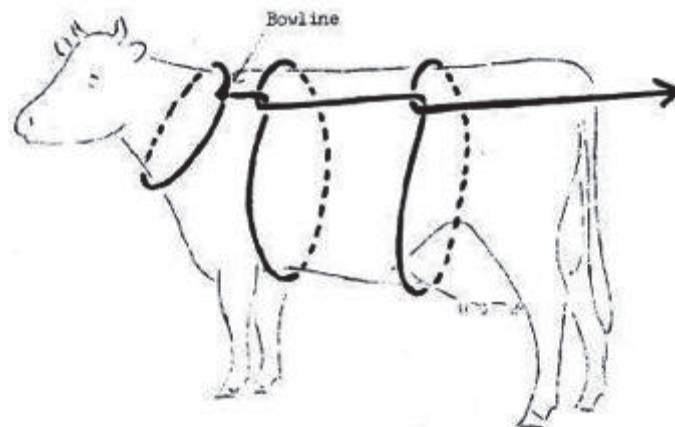
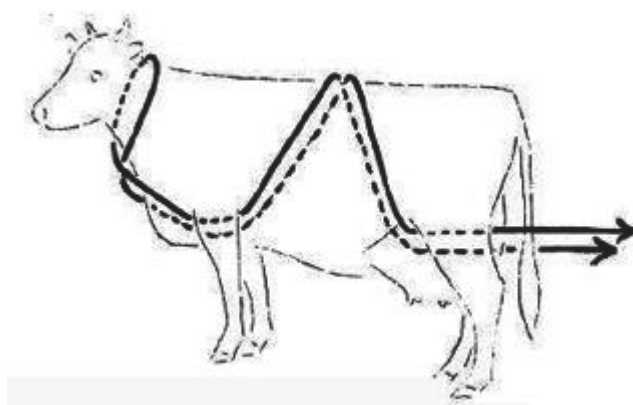
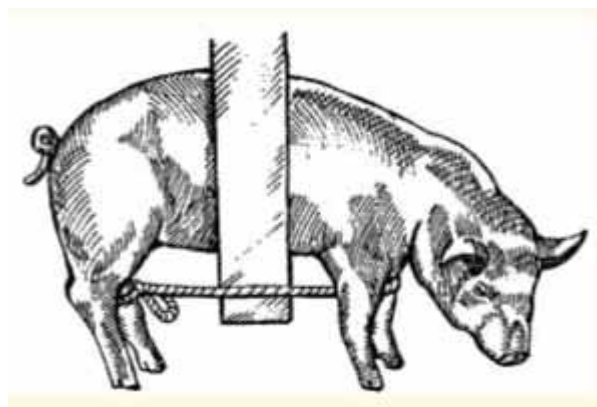


Fig2.4.1 Casting by Two loop or Reuffs method (Source:thehealingvet.com)



*Fig2.4.1 Casting by alternative method (Source: thehealingvet.com)*



*Fig2.4.1 Rope board casting of Pig*

**Precautions to be taken during casting:**

- Fast an animal for up to 12 hours before casting. If the animal has a full stomach, it may rupture during casting.
- It should be done in a place where it is safe to throw the animal, where the soil is soft or covered with straw.
- Do not leave an animal lying down for long as it may lead to complications.
- There should be sufficient labour available to complete the manoeuvre in the shortest time with the least distress to the animal. It is necessary to have a reliable person at the animal's head in order to control it. Depending upon the size of the animal that must be cast, either two or three persons are needed to pull on the rope.

### Restraining Sheep and Goats

- Sheep and goats can be restrained by trapping them in between your legs.



Fig2.4.1 Restraining Sheep and Goat (Source: nzdl.org)

- The handler also can hold the right front and hind legs in his righthand and the two left legs in his left hand. The head of the kid/lamb is upward and its back is laid against the handler's body.



Fig2.4.1 Handling of Lamb and Kid (Source: CAHW Manual, Heifer International)

### Precautions in handling sheep and goat:

- Do not attempt to restrain by pulling on head, horn or hide.

### Restraining Birds

- Hold the bird with two hands or each wing separately in each hand.
- Once you have the bird hold it by putting your middle finger in between its legs and squeeze the legs

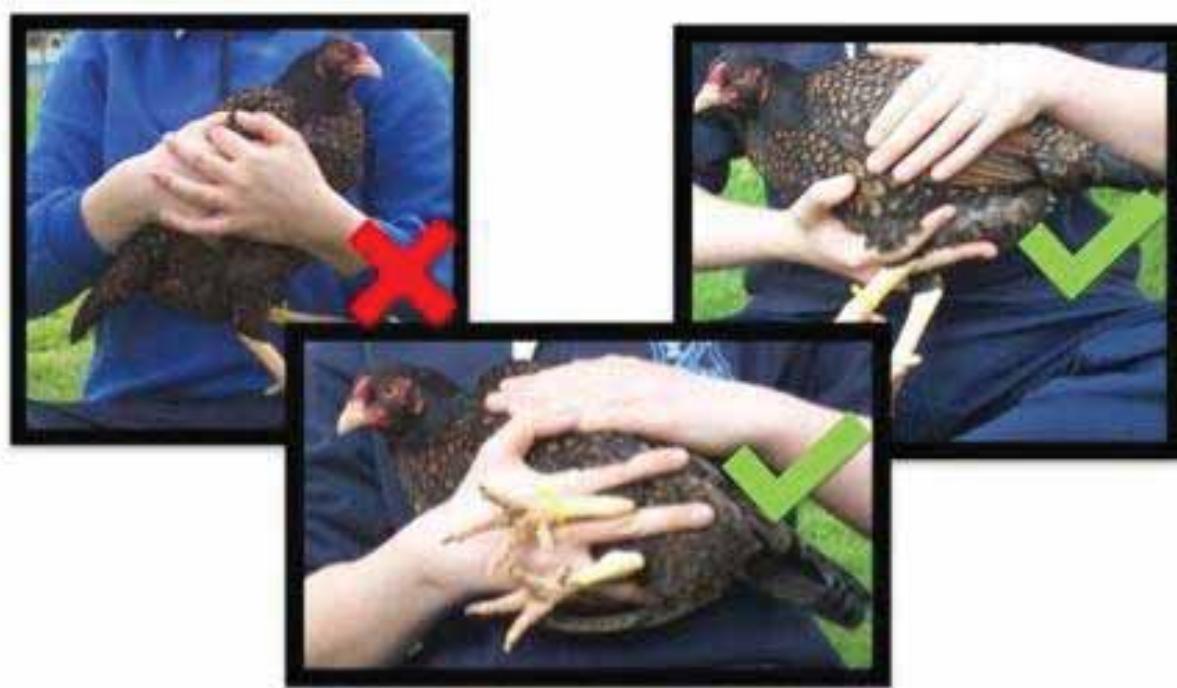


Fig2.4.1 Restraining Poultry (Source: poultryhub.com)

**Precautions in handling bird / poultry:**

- Always be calm around the poultry, and avoid stressing it out unnecessarily. Use slow, steady movements with minimal noise: *Poultry are flock animals with many predators. If we chase them around quickly, they perceive it as an action of predator. Illness and stress can be exacerbated by further stress.*
- Generally, birds used to struggle and try to get away from the handler as fast as possible. Simply dropping a bird from a height while it's struggling may cause injuries to the legs.
- Birds have an incomplete diaphragm. One should not hold a bird too tightly as it may have difficulty in breathing.

## Exercise



1. What are the different types / methods of restraining of animals?

Answer: -----

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2. What is Casting? Mention the different methods of Casting?

Answer: -----

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Notes



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## UNIT 2.5 Personal safety

### Unit Objectives



**At the end of this unit, you will be able to:**

- Appreciate the importance of personal safety.

### 2.5.1 Personal safety

Handling of livestock is associated with a variety of injuries and illnesses among humans. These injuries and illnesses may be due to direct exposure or may be due to environmental contamination from animals.

Personnel who work with animals often have to stand, reach, bend or exert physical effort in sustained or unusual positions. This may lead to joint pain of the back, hips and knees. One should be careful and practice appropriate methods.

Close association with an animal, which often has unpredictable behavior, puts the animal health worker at risk. Many livestock have superior size and strength. Injuries are often due to direct trauma from kicking, biting or crushing against a structure and often involve the worker's lower extremity. The section in this handbook (Refer Unit 2.2 and 2.3) on proper way of approaching farm animal and animal behavior is highly relevant in this regard.

Humans may become infected by organisms normally present on animals. Diseases that are naturally transmissible between animals and people are called Zoonotic diseases. We will discuss some of these diseases in corresponding modules.



Fig 2.5.1 Personal safety

Source: cdc.gov

Some important rules to help you ensure personal safety:

- Stay current on appropriate vaccinations, such as tetanus and rabies.
- Wash your hands frequently with antibacterial soap, especially after handling any animal and prior to eating.

- Wear long pants and sturdy shoes or boots.
- Immediately disinfect scratches and bite wounds thoroughly.
- Always practice safe and humane animal-handling techniques and learn to use proper equipment where available.

Seek assistance when handling animals whose dispositions are questionable

- If exposed to tick-infested areas, check your body and clothing frequently. Use tweezers and wear gloves to remove ticks, taking care not to squeeze or puncture the body of the tick.
- Report any bites or injuries and seek medical treatment as appropriate.
- Tell your physician that you work closely with animals, and visit him or her regularly.

### **Use of personal protective equipment (PPE):**

Concept of using personal protective equipment (PPE) is new to many people who deal with animals in rural set up of developing countries like India. This is mostly because of the fact that majority of animals are reared in the backyard and there is very high degree of human animal interaction.

We need to appreciate that people working in close contact with infected animals not only have personal risk but also can easily carry (cross-transmit) the disease causing agents elsewhere. Many viruses are carried on skin, hair and clothing, and can remain active for extended periods.

In recent years, government agencies are providing quality and specific PPEs to animal health workers when they are asked to assist rapid response teams (RRT) for control of diseases.

Some of the common PPEs which can be used by animal health workers are as follows. Organized farms should provide PPEs to animal health workers and they should be kept within the farm premises appropriately.

- Gloves
- Surgical Masks
- Safety shoes / boots with steel caps.
- Coveralls / Dungarees (work wear) or designed safety trousers with protective lining on front side.

## Exercise



1. Mention the Personal safety measures to be followed?

Answer: -----

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2. Mention the Personal Protective Equipment?

Answer: -----

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Notes



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## 3. Implementing regular preventive animal health care program

Unit 3.1 – Animal identification and record keeping

Unit 3.2 – Observation of environment and history taking.

Unit 3.3 – Routine examination of health of animals

Unit 3.4 - Causes and ways of transmission of diseases

Unit 3.5 – Identifying common diseases

Unit 3.6 – Zoonotic diseases.

Unit 3.7 – Concept of notifiable diseases

Unit 3.8 – Preventing diseases in animals



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Appreciate the importance of data and collect the same for efficient preventive care service delivery.
2. Appreciate herd health approach. Identify and take action as far as preventable common or endemic diseases are concerned.
3. Appreciate the need to follow government technical guideline related to scheduled or notifiable diseases.
4. Communicate disease related information efficiently so as to create demand for preventive services e.g. vaccination
5. Schedule, conduct preventive services such as vaccination, deworming, spraying / dipping collection of samples for lab test etc. as per local area guideline.

## UNIT 3.1: Animal identification and record keeping

### Unit Objectives

**At the end of this unit, you will be able to:**

- Appreciate the importance of data and need to follow given procedure for collecting the same.
- Learn about animal identification and data collection tools

### 3.1.1 Why do we need to identify animals?

#### How can we do this?

In many Indian villages its common to call farm animals by their given name. Many farmers prefer to give one-to-one attention to animals rather than treating them as just a part of the herd. Researches indicates this as a good practice. However, problem related to identification arises when individual animal needs to be counted as a part of larger herd e.g. within a village or a production cluster. Animal identification involves scientific practice that assist not only in identification (with ownership) but also in keeping accurate records. Animal identification is also closely related to livestock insurance and tracking of livestock and livestock products. Changing disease scenario and trade norms demands that animal movements / products should be tracked to its area of origin. An ear tagged animal with detail records about its parentage, health status, production performance etc. is likely to be sold with better price. We will discuss on data and records in corresponding sections.

There are various methods of animal identification such as:

- Simple marking on skin
- Ear notching
- Ear Tags (simple / electronic)
- RFID inserts in rumen or under the skin (especially for horses, dog and cats)
- Branding
- Tattooing
- Neck chain
- Nose / muzzle printing

In modern time, amongst the above methods, ear tagging (simple plastic tags and tags with bar / QR code) is most common method. Permanent animal data is stored in the code of the ear tag which can be accessed by scanning the code with cell phone camera. For this free download or dedicated

QR code scanners are available on Play Store. Advantage with this kind of device is that secured and credible data transfer to central server can be assured.



Fig 3.1.1 Plastic Ear tags with QR Code and

Bar code



Fig 3.1.1 A goat identified with ear tag (Source: r-o.in)



Fig3.1.1 Ear Tag pliers

Besides electronic identification of individual animals, identification of farm premises (or registration of client farmers) is a good practice which is now being adopted in various parts of the country. This is especially useful where individual animal identification is difficult to practice (as in poultry, rabbit) or herd data on herd / flock basis (disease testing, vaccination) is to be maintained. Please note in the following card two QR codes have been given, one for using when there is internet connectivity and the second when SMS is to be sent for data update.

Premises Registration Card/ PIN :1035012			
	Premise Owner/ Chandan Singh	:	
	Contact No/	:8651280801	
<b>SMS</b>			<b>URL</b>
Village/	:	:chetantola	Block/ :Muzaffarabad
District/	:	:Saharanpur	State/ :Uttar Pradesh
Pin Code:400 605			

Fig3.1.1 Premises Smart Card (Source: vetware.in)

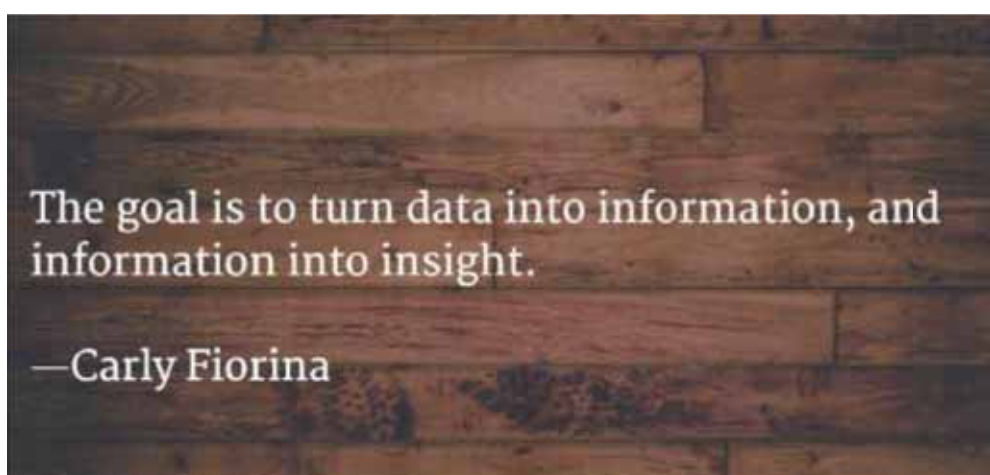


Fig 3.1.1 Marking animals in livestock markets (Photo credit: vethelplineindia.co.in)

### 3.1.2 What is data and why it is important?

Facts and numbers collected together to help in decision making is called 'data'.

When data is organized systematically it gives us 'information'. Set of information clubbed with experience of people helps in getting insights to any problem.



For example, population of goat in a village in any given year is a 'data'. But when you systematically arrange this data for every year, you can get information such as increase or decrease of goat population in that village. If you are interested, you can further look for additional information and

discuss with experienced persons to have an insight in to why there is increase or decrease in population.

Note that the data regarding population of goat in a village can help in planning mass vaccination campaign targeted at controlling a disease affecting goat.

A detailed study of an area to gather data is called conducting as 'Survey'.

Experts designs and leads surveys. They also conduct scientific analysis of collected data to get valuable information which along with experience helps in decision making e.g. How much budget to earmark for vaccination?

Experts cannot conduct scientific analysis on data which is incomplete or collected not as per required format. There is always a definite or given procedure to collect data and same is needed to accurately analyze data into information.

Expert or your supervisor will train you on data collection procedures based on approved methodology. Learning and following guidelines provided during such training is essential to ensure results.

Government department or private institutions collect data primarily to make timely decisions to prevent and control disease, at the level of state or for a larger area. As an animal health worker you need to help department or your institution to collect data which in turn will help you do your job better. With availability of designed software on mobile devices, organization now prefer data collection on animal health and production on an on-going basis. Such real-time data greatly helps in accurate and timely decision making related to veterinary service delivery, trading of animals etc.

### 3.1.2 What is record keeping?

Record-keeping refers to the systematic recording of data / information in standardized formats. Record keeping helps in learning from past and in deciding future course of action. It is an essential requirement for evaluating impact of any action. One cannot prove himself / herself without proper records. For a farmer records are base to estimate profit / loss. Some records are also mandatory legal requirement.

Formats used for record keeping varies from organization to organization and is dependent on context and nature of operation. An animal health worker often needs to collect health, production and breeding related data of animal under care as per instruction and given format. He / She needs to submit the same to appropriate authority 'on time'.

Now a day's mobile devices are being used to capture and send livestock farm records in specific formats to storage centers, one can get online customized reports from the stored records as or when required.



Fig 3.1.2 Farm records captured through mobile device (Source: vetware.in)

Following is an example of health record to be maintained by an animal health worker for inspection of his/her supervisor.

**Record Book of ..... (Name of the Animal Health Worker)**

Page No.....

Date:

Sl. No.

1. Name and detail address of the farmer: (With service area code- if any)

.....

2. Name or Identity of animal (s) or Identity of herd / flock (Note farm premises ID code –if any)

.....

3. Detail description of: Species, breed, age, sex, weight, production status (where appropriate)

.....

4. Individual / herd / flock vaccination details: (Vaccine name, date given etc.)

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5. History / Observation of surrounding (Indicate previous ailments).

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6. Symptoms observed on animal / flock of birds.

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 7. Physical examination findings  
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 8. Provisional diagnosis  
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 9. Comment / direction of supervising veterinarian (if any) (Note time and mode of communication)  
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 10. Action taken on comments of supervisor:  
 .....

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 11. Note on conducted lab test / findings (If any, as per direction of supervising veterinarian)  
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 12. Final diagnosis by supervisor (Indicate disease code given by organization for online data entry)  
 .....

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 13. Treatment initiated or advices given (As per consultation with supervising veterinarian)  
 .....

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 14. Note on follow up (Indicate date of visit and activity conducted)  
 .....

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 15. Closing remark  
 .....

.....  
 16. Signature of supervising registered veterinarian with comment on closing:  
 .....

*NB: Separate record book can be maintained for each of the service area.*

## Exercise



1. Take help of your instructor or supervisor to prepare a format for keeping health, production and breeding records of a herd of goat belonging to a farmer.

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2. Discuss in group any filled in record format of an existing livestock farm.

Outcome: -----  
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3. Prepare cow / goat ear model by cutting cardboard sheets. Now apply tags to these ears and check its correctness - 5 tags

Answer: -----  
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4. Download QR code reader application on your cell phone and scan QR coded ear tag figures supplied to you.

Answer: -----  
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5. Create data file of five animals and enter various records using your mobile application – for this URL address, user name and password will be supplied to you.

Answer: -----  
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Notes



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## UNIT 3.2: Observation of environment and history taking

### Unit Objectives

At the end of this unit, you will be able to:

- Understand and appreciate the need of observation and history taking for disease diagnosis.

### 3.2.1 Observation of environment and history taking

Sickness or disease in animals often results from a combination of factors. Discovering and addressing these factors can not only permanently cure a diseased animal but also prevent other animals within the herd / flock from getting the same disease in future. Following figure shows some of the factors that influences animal health. Note the term bacteria, virus and parasites. These are living organisms that causes various diseases in humans and animals.

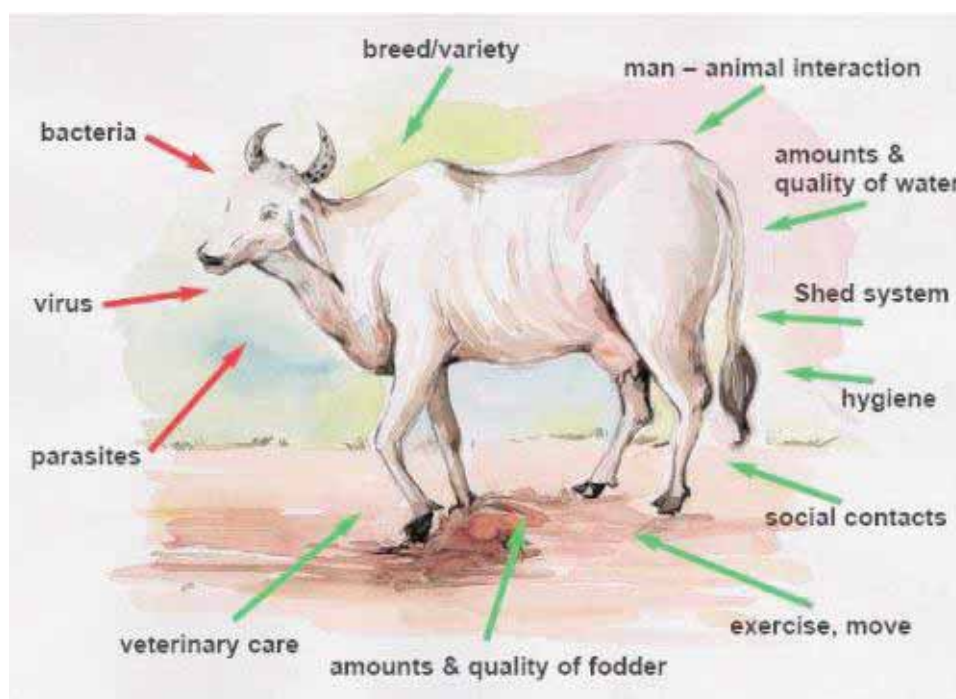


Fig 3.2.1 Some of the factors influencing animal health (Source: IFOAM)

Before physical examination, observation of the surrounding of animals (the environment) and careful questioning and listening of the owner is a pre-requisite for diagnosing any diseased condition. An animal health worker should routinely visit farm households and conduct observation and engage with farmers with an intention to discover such factors which can lead to diseases.



Look at the items above, it represents two professions - a detective and a doctor. Just as gathering systematic information is crucial for a detective to solve a crime, to solve a disease / or a potential future problem a doctor too needs to focus on finding various factors causing the disease. Just like a detective, a doctor too starts his action by asking relevant questions, observing the surroundings and physically examining the animal / herd (crime scene in case of the detective).

Caring / treating a single animal for a presenting symptom or disease is not the ultimate goal. One need to focus on preventing the disease in future and protecting other animals in the herd from having similar disease. This needs careful actions to find causal factors of diseases.

Unlike in human, a key problem observed in case of smallholder rural farms is the poor or late reporting of animal diseases by owners. This makes treatment costly and often unsuccessful. Moreover, the diseases spread quickly and cause harm to larger areas. A good animal health worker therefore should be pro-active and visit farms of client farmers regularly for identifying potential factors that can cause disease.

For an animal health worker observation and history taking is not limited to a situation where a visiting farmer or an owner reports a problem. He should proactively, engage with farmers within the community and conduct observation and take history of day to day events from owners as or when possible.

As an animal health worker you need to work hard to improve your communication and observation skills. As you will learn more about animal diseases and work in field conditions, you will automatically acquire the skill of asking relevant question.

Listening to owner and asking relevant questions is called 'history taking'.

The questions you need to ask an owner can be grouped in to following categories:

- Immediate history: what is the presenting problem?
- Past history e.g. if the symptoms were reported previously also?
- Nutritional history e.g. Is there any change in feeding practice?
- Environmental history e.g. Did the animal graze on a marshy land?

There are number of diseases which are species and age specific. Good history taking can help to rule out some specific disease immediately.

An animal can be observed from a distance without disturbing it to note findings on following:

- Condition of the animals e.g. Thin, weak, pregnant, lactating
- Behavior of the animals e.g. Looking or kicking at the abdomen, huddling together in case of poultry.
- Movement e.g. Does it walk in circle?
- Discharges e.g. Any discharge (blood, pus) from body openings (Eyes, ear, nose etc.)
  
- Respiration e.g. rapid breathing, breathing with difficulty etc.

We will discuss more about this in corresponding sections.

**Few important points to remember:**

- Encourage farmers to speak or narrate the story. Demonstrate interest, empathy and respect. Always avoid lead questions. Be cautious that some farmers may give wrong history to hide their mistake or negligence.
- Humans in general tend to combine observation with perception or interpretation of what they see. Our perception of what we observe is shaped by our culture, our experiences, and previous knowledge. The only way to avoid the biases that we bring into observation is to become fully aware of the factors that shape our perceptions. (Do not make assumptions)
- Observing and asking questions about the surrounding environment, other animals in the herd and husbandry practices such as feeding is very important to diagnose the root cause of any problem.
- Veterinary care of farm animals cannot entirely rely on history as described by an owner or caretaker. It essentially requires observation and physical examination of animals (including the herd / flock) in farm setting or at the farm household itself. Animal health worker should avoid giving advice to farmers without physically being present in the farm premise.

## Exercise



### 1. What is the need of History Taking of Animals? How it helps to Animal Health Worker?

Answer:

[illegible]

Notes



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## UNIT 3.3: Routine examination of health of animals

### Unit Objectives

At the end of this unit, you will be able to:

- Learn concept of a healthy animal and differentiate between a healthy and sick animal based on observation.
- Learn how to examine and record parameters pertaining to health of livestock and poultry.

### 3.3.1 Identifying sick animals

A healthy farm animal can be defined as one which is not sick, well-nourished and contributes economically to its owner.

An animal gets sick or diseased when something goes wrong with the body or part of its body.

A sick animal can be identified by observing following:



*Fig 3.3.1 Identifying sick animals*

- Appearance:** A sick animal is not alert to its surrounding and looks dull. Some may lose weight. Faecal staining down the hind limbs indicates a degree of diarrhoea.
- Movement:** The animal will not walk easily and steadily with all of its feet taking its weight. Its steps are not regular. If one goes near an animal that is lying down it will not respond and stand up.
- Eyes:** The eyes are not bright and alert. There may be discharge at the corners
- Ears:** Most animals have erect ears which move in the direction of any sound. Ear movements will also be quick to get rid of flies. A sick animal will not have this.
- Nose:** The nose of sick animal is often not clean and have discharge. In cattle and buffalo, the muzzle is dry (Healthy animals frequently lick their noses with their tongues)

- F. Mouth: Some sick animals shows saliva dripping from the mouth. The chewing may be slow or incomplete.
- G. The coat: A sick animal's coat is not shiny and smooth (Healthy cattle, buffalo and their calves lick their coat and the lick marks are often evident)
- H. Behavior: If a cow or buffalo keeps looking at its flanks or kicks at its belly it has a pain in the stomach.
- I. Breathing: In a sick animal breathing may not be smooth and regular at rest (Note that movement and hot weather increases the rate of breathing)
- J. Droppings or dungs: Very soft droppings (diarrhoea) is a sign of ill health. If the animal has difficulty in defecating (constipation) this is also a bad health sign.
- K. Urine: The urine may not be clear as in case of normal. The animal may show signs of pain or difficulty in urinating.
- L. Appetite: A sick animal will not eat and drink normally. A healthy pig normally rushes at its feed, but when sick they will not show such behavior.
- M. Rumination: Sheep, goats, cattle, buffalo and camels chew the cud (ruminate) for 6 to 8 hours each day. It is a sign of ill health when these animals stop ruminating.
- N. Sound: Some animal may produce abnormal sounds like coughing or sneezing
- O. Production: In the milking animal a sudden change in the amount of milk produced can mean a health problem. Any sign of blood or other matter in the milk points to infection in the udder. There should be no swelling of the udder and no sign of pain when it is touched. There should be no injury to the teat. Similarly, in case of poultry an unnatural drop in egg production may indicate disease condition.

***Disease symptoms in poultry:***

Some of the signs of diseased poultry are as follows:

Sleepiness, Sneezing, coughing, respiratory rales, Drowsiness, Huddling, ruffled feather, swelling of head and face, lacrimation (discharge from eye), nasal discharge, vent pecking, pasty white / green / yellow diarrhoea, torticollis (a condition in which the head becomes persistently turned to one side), tremors or unsteadiness, cyanosed (blue) comb/wattle, conjunctivitis etc.

### 3.3.2 Physical Examination

We have learned about observation and taking history to determine the health status of an animal or a herd of animal. We can physically examine an animal and note some vital parameter which can help in further diagnosing a disease or to simply ascertain the health status. As an animal health worker you have to record these parameters in those animals within the herd that appears sick and share the same with supervising veterinarian.

Always watch the animals or herd of animal from a distance, talk to the owner or caretaker, and then physically examine suspected animals.

Following are the different ways of getting vital parameters:

#### A. Measuring body temperature:

Mercury thermometers are most commonly used device for measuring body temperature. The mercury stops at a certain point depending upon the body temperature of the animal.

*Note: Your instructor will demonstrate the process of taking temperature.*

Tips:

1. Following the insertion of 2/3 rd of thermometer into anus gently, do not forget to make a slight inclination so that the thermometer touches the rectal wall. Every time you use the thermometer clean it with cold water and soap or disinfect it afterwards.
2. Do not wash the thermometer in hot water or leave it in the sun.
3. Do not touch the bulb of thermometer as this could change the reading.

#### B. Measuring respiration

The number of times an animal breathes per minute may indicate certain diseases.

You can measure respiration rate by holding back side of your hand in front of nostrils and counting the number of times per minute the air that comes out of the nostril hits your hand. You can also observe the movement of the ribs as the animal breaths.

#### C. Measuring Pulse

Pulse rate is the number of heart beats per minute.

Pulse rate in cattle can be measured by holding the base of the tail and placing fingertips in the groove underside of the tail. In case of goat and sheep, pulse can be measured by putting fingertips at the facial artery on the side of the lower jaw. Finding peripheral pulse is difficult in pigs. In thin or young pigs one can palpate the femoral artery pulse.

*Note: Your instructor will demonstrate the place and process of taking pulse.*

#### D. Rumen Motility

Ruminants -which includes cattle, buffalo, sheep, goats and yak -chew cud. They have four compartments in their stomach, the biggest one is called as rumen. One can feel the movement of the rumen by placing hand with gentle pressure in left flank of ruminants for about 2 min. Absence of movement is a sign of illness.

### E. Dehydration check

A dehydrated animal doesn't have enough liquid in its body. A simple way to test this is by pulling a fold of skin near neck area; if it does not go back to its original position and remains standing for more than three seconds the animal can be diagnosed as suffering from dehydration.

*Note: Your supervising veterinarian may use some other methods to conduct more detailed examination of animal to evaluate various functional systems within animal body such as digestive system, circulatory system, nervous system etc. You may be able to learn these methods with more study and practice.*

Following table indicates normal body temperature, respiration and pulse rate of different animal species:

ANIMAL SPECIES	TEMPERATURE °F	TEMPERATURE °C	RESPIRATION RATE/MINUTE	PULSE RATE/ MINUTE
Camel	93-107	34-42	10-15	45-50
Chicken	107	42	12-40 (varies)	100-200 (varies)
Cow	101	38.4	16	50
Dog	102	39	10-30	60-120
Goat	103	39.5	15	75
Horse/Donkey	100	38.1	10-12	40
Pig	102	39	15	75
Rabbit	103	39.2	55	130
Sheep	103	39.5	15	75
Water buffalo	100	38	12	45
Yak	101-102	38.5-39	20-40	60-70

Table 3.3.2 Physical check

### 3.3.3 Laboratory and post-mortem examination

Where available, animal disease diagnostic laboratories can assist farmers in diagnosing diseases from collected samples such as blood, urine, dung, skin scrapping etc. Routine laboratory test for diagnosis of latent problems in herd of animals is particularly important.

Post mortem examination is another important tool and is a valuable part of diagnosis of diseases or to ascertain the cause of death. It helps in effective control of animal disease. Post mortem examination is very common in poultry industry.

As an animal health worker while working with veterinarian you may have ample opportunities in future to learn basics of sample collections and their dispatch to laboratories. Laboratories often publishes guidelines which are good source of reference. Similarly, you can learn how to assist veterinarian in conducting post mortem while working in field. You can also join further skill training courses to become veterinary clinical assistant and work in laboratories.

*Class Assignment:*

Note down the process of taking temperature serially as demonstrated by your instructor. What care will you take to ensure proper reading?

*Practical:*

Show how to take temperature in different animals and properly read a thermometer.

## Exercise



1. Note down the process of taking temperature serially as demonstrated by your instructor. What care will you take to ensure proper reading?

Answer: -----  
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2. Show how to take temperature in different animals and properly read a thermometer.

Answer: -----  
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Notes



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## UNIT 3.4: Causes and ways of transmission of diseases

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand various cause of diseases and how transmission of diseases takes place.

### 3.4.1 Cause of diseases

Knowledge of what causes disease, and of how animals can get a disease, helps us to know how to prevent disease and to treat / care sick animals.

#### **What causes disease?**

Causes of diseases can be grouped as follows:

#### **A. Parasites:**

Parasites are organisms that have to live on or in other organisms, such as animals, in order to survive. Most parasites are easy to see, although some mites and the early stages of worms can only be seen under a microscope. There are external and internal parasites.

Flies, lice, fleas, ticks and mites which are external parasites can cause serious diseases in animals. They also result in irritation and skin damage.



*Fig 3.4.1 Cause of diseases*

**Cause of diseases** Internal parasites (including flukes, roundworms and tapeworms) can cause some serious diseases and loss of production in animals . They generally live in the stomach and intestines and also in other parts of the body such as the liver and lungs

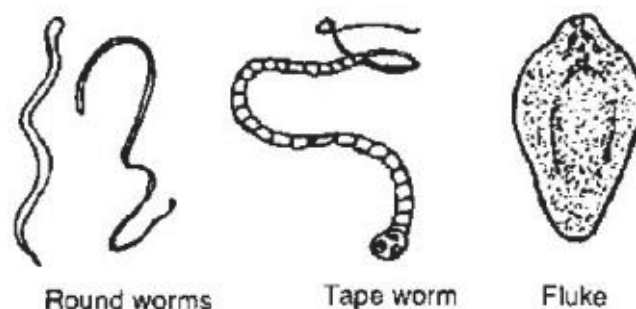


Fig 3.4.1 Cause of diseases

### B. Microbes (Germs)

Microbes (germs) are living organism which are too small to be seen with the naked eye. Many different microbes can cause disease in animals, but there are four main types. They are

1. Viruses
2. Bacteria
3. Fungi
4. Protozoa

### C. Poisoning

Animals can be poisoned by chemicals (such as insecticides and dips), poisonous plants and fungal toxins. These animals can also be bitten by scorpions, snakes and spiders D. shortage of enough food or lack / shortage of a particular part of the food (such as phosphorus) can also cause disease. E. In few cases, animals can be born with a disease.

### D. Dietary and metabolic

Lack of enough food or lack of a particular part of the food (such as phosphorus) can also cause disease.

### E. Congenital diseases

In some cases, animals can be born with a disease. Some of these may be inherited (passed on from the parents).

### F. Environmental disease

Environmental problems, such as littering, contribute to some diseases, for example, animals may eat plastic bags or wires which can harm the animal's health.

### G. Cancer

Cancer occurs when some of the cells in the body grow in a way that is different from normal. Illness occurs because of the pressure of the growth on other parts of the body and the fact that affected parts of the body cannot function normally.

### H. Allergies

Some diseases are caused by allergies, which is when the body's own immune system attacks part of the body.

### I. Degenerative disease

Some diseases are caused due to breaking down of parts of the body. This is particularly seen when animal becomes older.

Disease can be classified as **acute** or **chronic**. The acute disease starts suddenly and remains for a short period when an animal either recovers or dies. The chronic disease lasts for a long time and weakens the animal. Diseases are said to be **infectious** (will spread from one animal to another) or **noninfectious** (will not spread from one animal to another).

Non-infectious diseases can be caused by poor feed and the lack of minerals, salts and vitamins that the body needs. Non-infectious disease can also be caused by poisoning with plants or chemicals, by cuts, broken bones and burns.

Few of the diseases pass from the parent to the young (called as hereditary). Many of non-infectious diseases are chronic though they can be acute. These can cause large losses of milk, meat and wool. The working (drought) animals don't work well and their rate of reproduction can be low with young being born dead or dying before they are weaned.. Chronic diseases are often thought to be "normal" but when the cause is known and eliminated production can be greatly increased.

Infectious diseases are caused when the body is attacked by tiny living germs as mentioned above.

### 3.4.2 Transmission of diseases

Transmission of Infectious diseases takes place by:

- Direct contact between animals.
- Germs in feed and water.
- By faeces and urine from sick animals.
- By discharges from eye, nose and mouth.
- Through semen of infected animals
- By flies, ticks, lice and fleas.
- By dirty housing or shelters.

The disease causing organisms are introduced or transmitted to a poultry flock in a variety of ways. Such as

- Carriers of disease causing organism (Those not showing any symptoms) within a flock
- Birds recently acquired from an outside flock
- Eggs from infected breeder flocks.
- Human feet, hands and clothes
- Dust, feathers and manure on equipment and supplies, such as trucks, coops and egg filler flats
- Pet birds, predators, rodents, flies and insects
- Live or contaminated vaccines
- Contaminated feed/feed ingredients
- Water
- Air

Note that young and old animals become infected more easily.

## Exercise



1. Define Parasites.

Answer: -----

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2. How the diseases get transmitted in animals? Explain.

Answer: -----

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Notes



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## UNIT 3.5: Identifying common diseases

### Unit Objectives

At the end of this unit, you will be able to:

- Identify common animal diseases from the symptoms.
- Appreciate the importance of reporting incidence of notifiable diseases.

### 3.5.1 Common diseases

Following table describes some of the common diseases in India along with most important symptoms. (Please note down common name of these diseases in your area as given by instructor.)

Name of the disease	Most important species of animal affected with	Symptoms / Remarks
Hemorrhagic Septicemia (HS)	Cattle and Buffalo	In most cases the disease is acute and results in death within 8-24 hr after onset. Animals first appear dull and then shows reluctance to move. There is high fever, salivation, and nasal discharge. Swelling appears under the throat, neck and chest.
Black Quarter (BQ)	Cattle and Buffalo	It's an acute disease. Young cattle between 6-24 months of age, in good body condition are mostly affected. It generally occurs during rainy season. The symptoms are high fever, loss of appetite, depression, dullness, no rumen movement, rapid pulse, difficulty in breathing, Crepitation swelling (cracking or popping sound can be heard under skin) over hip, back and shoulder.

Foot and Mouth disease (FMD)	Cattle, sheep, goat and pigs	Fever for 2 to 3 days, difficulty in eating due to painful tongue and mouth lesions (blister-like lesions / wound in mouth, gum and tongue) wounds can also be seen just above hoof line and between claws. There is production of sticky, foamy saliva. Infected animals sway from one foot to the other due to the tenderness of the feet. In lactating animals, there is drop in milk production. Abortion may take place in pregnant animals. The disease generally subsides in 1-2 weeks.
Anthrax	Cattle, buffalo, sheep, goat	The disease occurs mostly with sudden change in climate. Sudden death (often after 2-3 hours of being apparently normal) is by far the most common sign. Occasionally some animals may show trembling, a high temperature, difficulty in breathing, collapse and convulsions before death. This usually occurs over a period of 24 hours. In dead animals dark colored (poorly clotted) blood oozes out from all body openings.
Mastitis	Cattle, buffalo, sheep / goat. Pigs	Mastitis is an inflammation of the udder. Older and high producing dairy cows are more susceptible. Important symptoms in acute case include swelling of udder and teat, which is hot and painful. In acute cases there may be fever, animal refuses to let down milk, milk may coagulate and contain blood or pus. Lumps can be felt in the udder; teats may drop off in severe cases. In chronic cases, udder becomes hard.

Milk Fever	Cattle	The disease usually occurs in 5 to 10-year-old cows, and is chiefly caused by a sudden decrease in blood-calcium level, generally within 48 hours after calving. Most common 2 <sup>nd</sup> stage symptom is sternal recumbancy (sitting up on the brisket with the legs tucked under the body) and deviation of head towards the left flank region. The use of the word fever is a misnomer and there is no rise of temperature in milk fever.
Bovine Tuberculosis (TB)	Cattle	TB usually has a prolonged course, and symptoms take months or years to appear. The usual clinical signs include: weakness, loss of appetite, weight loss, fluctuating fever, intermittent hacking cough, diarrhoea and large prominent lymph node.
Brucellosis	Cattle, goats, camels, dogs, and pigs	The most obvious signs in pregnant animals are abortion or birth of weak calves. In case of infected bull there is swelling of testicles. It causes severe economic loss due to decreased milk production, weight loss, loss of young, infertility and lameness.
Tropical Theilerioses	Cattle, Yak, Buffalo (mild)	This is a tick born disease. anemia is often a feature of the disease. Characteristic signs include fever and swollen superficial lymph nodes. If the disease progresses, cattle rapidly lose condition.
Bovine babesiosis (Red water)	Cattle, Buffalo	Bovine babesiosis is a tick-borne disease. The typical symptom of the disease is high fever and production of dark red or brown-colored urine.

Fascioliasis	Cattle, buffaloes, sheep and goat	It is parasitic disease cause by liver fluke. The dairy cows show reduced milk yields and poor fertility together with excessive weight loss. Many show chronic diarrhoea.
Peste Des Petits Ruminants (PPR)	Sheep, Goat	High rise of temperature. The animal shows dull coat, dry muzzle and inappetance. There is profuse nasal discharge accompanied by sneezing and coughing. The discharge may be crust like, hard and matt the nasal and surroundings of eyes. There are ulcers and lesions (wheat grain like) in mouth. Profound halitosis (foul smell) is easily appreciable and the animal is unable to eat due to sore mouth and swollen lips. Diarrhoea develops 3-4 days after the fever and is profuse and faeces may be mucoid or bloody depending upon the damage. Pregnant goat may abort.
Sheep Pox	Sheep, Goat	It is an acute to chronic viral disease characterized by generalized pox lesions throughout the skin and mucous membranes. Papules like pock lesions appear in all the parts of the body, e.g., lips, cheeks, snout, nostril, face, ear, feet, thigh, abdomen, eye lid, neck, teat and udder.
Tetanus	Sheep and goat	It is a non-contagious, infectious disease caused by bacterial toxin characterized by contraction of skeletal muscles. Stiff gait and apathy to feed is the initial sign of the disease. The initial signs consist of restricted movement, muscular stiffness and difficulty in walk, lack of coordination and unusual walking

Enterotoxaemia	Sheep and Goat	Sudden death in young growing kids. Affected animals may show signs of stomach pain, such as kicking at their belly, repeatedly laying down and getting up, laying on their sides, panting, and crying out.
Classical Swine Fever	Pig	There is high fever, pig go off food, they are reluctant to move and remain huddle together. There is nasal discharge and gummed up eyes. Affected sow shows severe depression and generalize erythema (superficial reddening of the skin, usually in patches), Pig show lethargy, weakness of hindquarters. Infected pregnant sow aborts or delivers still birth / weak litters.
Ranikhet (ND)	Poultry	Affected birds show depression (droopiness) along with loss of appetite. Greenish diarrhea is a common feature. The head may be twisted to the side, drawn back or down between the legs. Wings drop down and birds drag them on the floor.
Avian Influenza	Poultry	Disease appears suddenly in a flock and may birds die without being sick, Purple discoloration of wattles and combs with swelling caused by abnormal accumulation of fluid. Swollen head, accumulation of liquid in eyelids. Pinpoint bleeding under the skin (mostly seen on feet and shanks)
Marek's disease (Neurological form)	Poultry	Paralysis (loss of muscle function) of wings, characteristic dropping of limb. Twisted neck (torticollis), lameness.
Coccidia	Poultry	Diarrhea (may be with blood and mucous), decrease growth / egg production.

## Exercise



1. Mention any 5 Common diseases, species of animal affected with and its symptoms.

Answer: -----

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2. Mention the Symptoms of Mastitis disease.

Answer: -----

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## Tips

- Treatment of common diseases are not included in this handbook as animal health workers need to follow strict organizational / state level guidelines on treatment procedures / medication of common diseases prepared by supervising registered private veterinarian or state veterinary department. These guidelines may differ from place to place and may also include scientifically tested and documented ethno-veterinary (Traditional) practices prevalent within the area.

## Notes

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## UNIT 3.6 Zoonotic diseases

### Unit Objectives

At the end of this unit, you will be able to:

- Understand and appreciate the importance of zoonotic diseases.

### 3.6.1 Zoonotic diseases

Many diseases are naturally transmissible between animal and human – they are called as zoonotic diseases. These diseases can cause a variety of illnesses in human, from minor skin rashes to serious infections. Some of the zoonotic diseases related to farm animals are:

- Anthrax
- Brucellosis
- Campylobacteriosis
- Leptospirosis
- Listeriosis
- Q fever
- Rabies
- Ringworm
- Salmonellosis
- Tuberculosis
- Influenza (particularly bird and swine influenza)
- Hydatid disease
- Cysticercosis

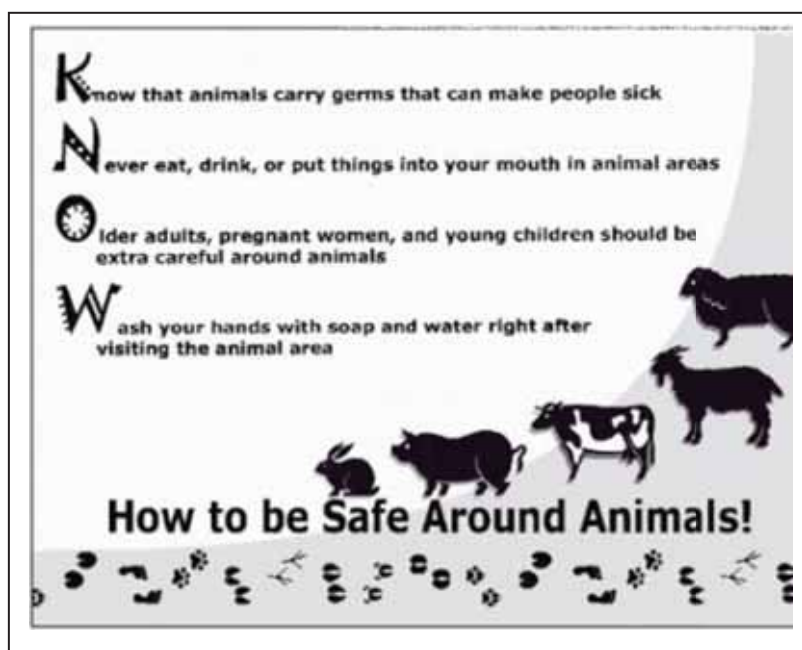


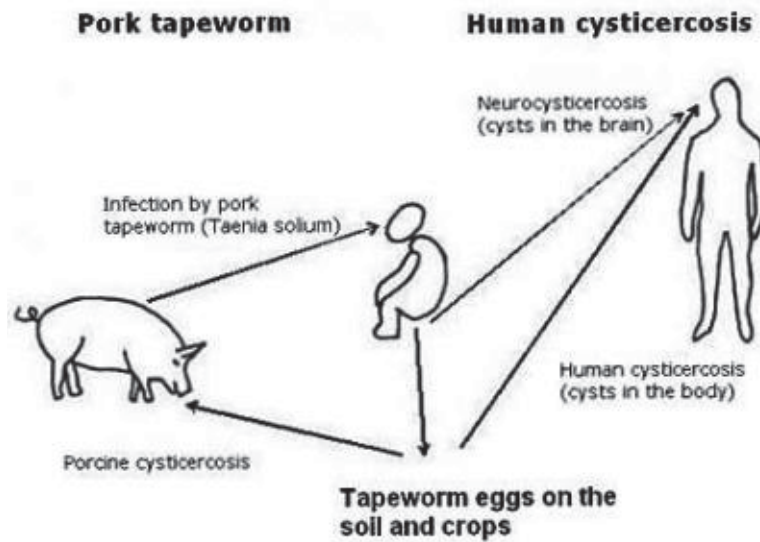
Fig 3.6.1 Animals health

Source: CDC.gov

## Exercise



1. Review following diagram and discuss zoonosis between pig and human  
(For regions with considerable pig population)



2. Define Zoonotic Disease.

Answer: -----

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3. Mention the Zoonotic diseases in Farm animals.

Answer: -----

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Notes



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## UNIT 3.7 Concept of notifiable disease

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand the importance and legal requirement related to reporting of certain diseases.

### 3.7.1 Concept of notifiable disease

Economic loss to the nation due to infectious diseases of animals are very high. Some of these diseases are also of human health importance. Infectious diseases can spread not only within a country but also from one country to another primarily by way of animal / animal product movement (Countries do import and export animal and animal products). Like various other countries, India too collaborates internationally and takes various measures to control the spread of infectious diseases. The activities in India in this regard are governed by a law known as 'The prevention and control of infectious and contagious diseases in animals' act'2009'

The above law in India, makes it compulsory for all to essentially report incidence of certain listed animal diseases to state / local government authorities. India as a country also report incidence of many of these listed diseases within the country to the world organization of animal health (OIE). This is an international trade obligations and failure to properly report often leads to difficulty in import and export of animal and animal products. These listed diseases as included in the above act are called 'notifiable' or 'scheduled' disease.

The number of scheduled diseases under various categories are as follows:

Multiple species diseases (21), Cattle disease (15), Sheep and Goat diseases (11), Horse (Equine) diseases (13), Pig diseases (7) and Poultry disease (14)

Prevalence of notifiable diseases varies from place to place.

As an animal health worker you need to appreciate the importance of reporting incidence of notifiable diseases. Your supervising veterinarian or state veterinary department will guide you on specific scheduled disease(s) prevalent in your area and the procedure to report the same.

Notes



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## UNIT 3.8 Preventing diseases in animals

### Unit Objectives

At the end of this unit, you will be able to:

- Learn best possible ways to prevent diseases in animals and communicate the same to farmers.
- Appreciate key concepts like herd health management and one health
- Learn about procedure of prevention related services.

### 3.8.1 Point Common measures

There are number of things we can do to prevent animal diseases or their spread. Following are some of the examples. As animal health worker, you can educate each and every client farmer on these practices.

1. Purchase animals only from reliable and well known source. Monitor new animals for disease before being introduced into the herd / flock.
2. Provide balanced diet.
3. Ensure sufficient space, fresh air and appropriate ambient temperature for animals reared in confinement.
4. Ensure proper drainage, clean and dry floor and pens. Dispose manure (dung) as early as possible.
5. Isolate sick animals from the rest of the herd. Arrange separate feeding for sick animals and healthy ones.
6. Where possible avoid mixing of different species and different age group of animals.
7. Clean all premises and equipment regularly.
8. Restrict movement of people / vehicle / goods between, within and near farm premises.
9. Dispose dead animals properly.
10. Clean and disinfect utensils regularly.
11. Burn bedding materials used by sick animals.
12. Adopt proper fly, parasite and pest control measures.
13. Prevent entry or movement of dog, cat and wild animals near farm premises.
14. Keep the udder and teat clean after each milking (Dipping of teat is recommended)
15. Clean hands and bucket before milking
16. Examine / Milk healthy animals' first
17. Teeth clipping of piglets is recommended to prevent disease like mastitis in Pig
18. Trim hoof of animals regularly.
19. Feed only properly cooked waste food (in case of Pig)
20. Keep health record, observe animals frequently for signs of disease and report incidence of disease to veterinary authority as early as possible.

### 3.8.2 Herd Health approach

Focus of any local preventive care program should always be herd of animal instead of individual animal. While working in a small-holder farm setting, an animal health worker may consider all livestock of a particular species in a village or service area as one herd. His / her aim should always be to keep the village / service area free from animal diseases. For this to happen, awareness and participation of community is a must. In many places livestock farmers sign paid retention contract with animal health workers guided by a lead veterinarian to ensure that diseases are prevented pro-actively in a planned manner ensuring enhancement in production simultaneously.

Animal health workers can collaborate with veterinarians to implement designed herd health management programs covering an entire village / service area.

Herd health service is defined as a planned animal-health and production-management program that uses a combination of regularly scheduled veterinary activities and good herd management (e.g. feeding, housing etc.) designed to optimize animal health and productivity (Blood, 1979.)

The concept related to herd health is based on this fact that, certain diseases and the production constraints can be well anticipated based on experiences. The management preventive medicine programs are basically designed to reduce potential adverse effects of these predictable constraints to against ones. Herd health management essentially requires animal identification and good and preferably real time record keeping with provision for scientific analysis of collected data.

With availability of designed IT based software applications for real time data capture and analysis, number of agencies in India are now a days implementing herd health management programs in rural areas working in collaboration with trained veterinarians and animal health workers.

#### ***Class Assignment:***

Take help of your instructor and try to understand the following diagram. It shows the importance of herd health or production medicine approach in comparison to traditional or "fire-engine" approach that focuses only on the individual animal. As an animal health worker, you should preferably work with veterinarians in implementing herd health management plan.

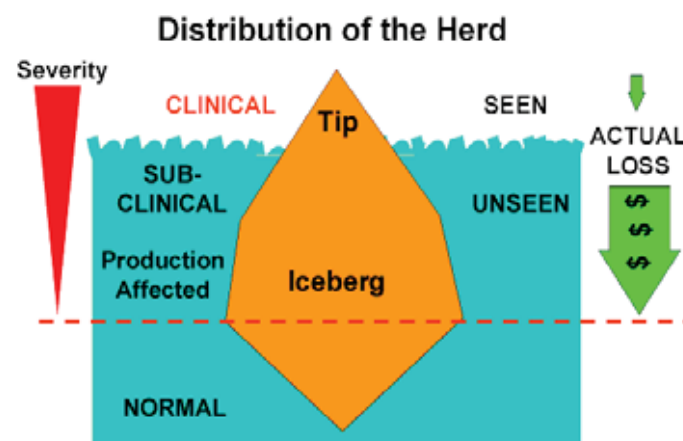


Fig 3.8.2 Iceberg concept

### 3.8.3 Preventive services

#### Vaccination

Like human, all animals can resist an infection or toxin. This is called immunity.

Vaccines are designed to increase an animal's resistance to specific diseases. Vaccination is the act of administering a vaccine; immunization is the protective response to the vaccine we hope to stimulate within the animal.

Immunization may reduce the likelihood or the severity of illness but may not prevent infection. Vaccinated animals may still get sick because pathogens (disease causing organisms) different from the vaccine were involved, because the immune system was overwhelmed by the infection, or because the vaccinated animal failed to develop a protective immune response.

As an animal health worker, you should educate farmers to invest on vaccination as same is the most potent tool to prevent specific disease. However, you should also inform farmers not to place all of their faith in vaccination and neglect other necessary measures for disease prevention as discussed under unit 3.6.1.

Vaccines are often given by injection or through nasal (Nose) or ocular (Eye) route.



*Fig 3.8.3 Intraocular (Eye) vaccination in poultry*



*Fig 3.8.3 Sub cutaneous vaccination in goat*

**Note:** Your instructor will demonstrate various vaccination techniques. Carefully observe methods and steps to be followed before, during and following vaccination.

Important points to remember:

1. Never do vaccination on sick animals
2. Prepare to face any emergency situation that may occur following vaccination.
3. Use vaccines from appropriate sources only.
4. Ensuring cold chain maintenance in every stage e.g. during storage, transport and prior to administration (at point of use)
5. Rotate vaccine stock in hand so that oldest vaccines are used first. No vaccine should be used after expiration date.
6. Follow all scientific (manufacturers) guideline related to vaccine reconstitution and administration procedure.
7. Help supervising veterinarian to report side effects (if any).

Community vaccination program should be organized as per calendar approved by local veterinary office. The day of vaccination camp should be fixed as per the convenience of farmers to ensure maximum coverage. Prior to conducting the actual vaccination program, as an Animal health worker you should work with village institutions / local veterinary office for mobilization of needed resources. Always conduct community vaccination programs in consultation with government veterinary hospital and in presence of registered veterinarians.

Record keeping of any vaccination program (Name of vaccine, administration related information - individual / herd level, date along with batch number etc. as per format of the private organization or department) is a must. As per law animal owners should receive certificate of vaccination signed by registered veterinarian.

Following vaccination in any area / farm, as an animal health worker you should always endeavor for:

- Timely reporting of vaccine failures to appropriate authority
- To support government / private laboratory for sample test (To monitor success of vaccination program)
- Ensuring maximum herd coverage and continuity of the vaccination program (booster doses).

**Annual Goat Health Calendar adopted by Central Institute for Research on Goats,  
Makhdoom, Mathura, Uttar Pradesh**  
(for prevention and management of important goat diseases)

**A. Vaccination:**

Diseases	Primary Vaccination		Repeat vaccination
	First Injection	Booster Injection	
1. Peste-des-Petitis Ruminants (PPR)	At 3 months of age	Not required	Every 3 years
2. Foot & Mouth Disease (FMD)	At 3-4 months of age	3-4 weeks after 1 <sup>st</sup> Injection	Every 6/12 month interval*
3. Goat Pox (GP) **	At 3-4 months of age	3-4 weeks after 1 <sup>st</sup> Injection	Every 12 month interval*
4. Enterotoxaemia (ET)	At 3-4 months of age	3-4 weeks after 1 <sup>st</sup> Injection	Every 6/12 month interval*
5. Haemorrhagic Septicaemia (HS)	At 3-4 months of age	3-4 weeks after 1 <sup>st</sup> Injection (2 doses at 1 month interval)	Every 6/12 month interval*

\*As per the recommendations of manufacturers

*Kids are naturally protected from diseases up to 3 months by proper feeding of colostrum immediately after birth.*

*For optimum benefits of vaccination, deworm your animals at least 15 days before vaccination*

**\*\*For sheep – replace goat pox vaccine with sheep pox vaccine**

Table 3.8.3 Vaccination

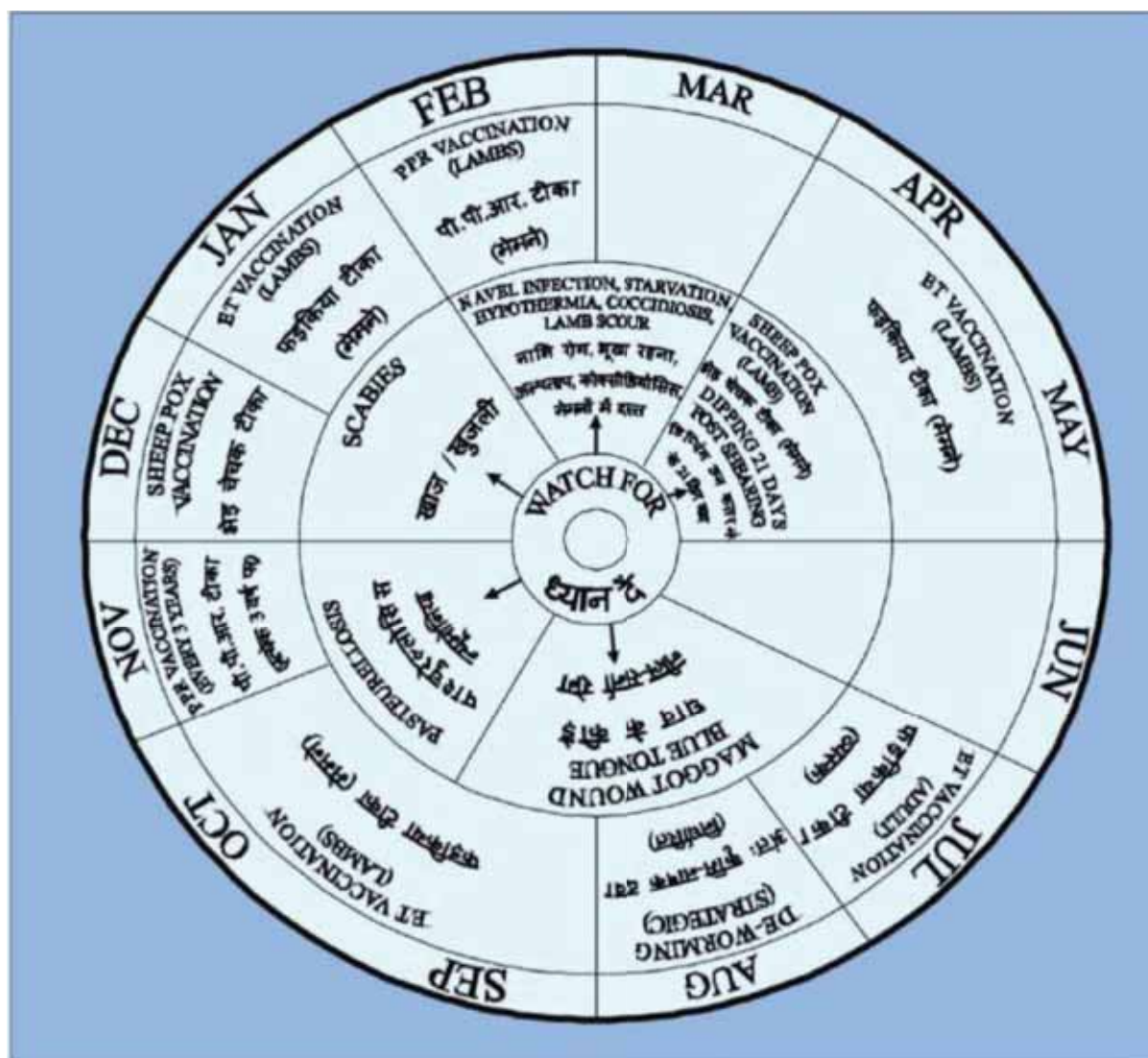


Fig 3.8.3 Model health schedule adopted by Central Sheep and & Wool Research Institute, Rajasthan, Government of India

### 3.8.4 Parasite control

For control of various internal parasites preventive de-worming is necessary. As an animal health worker you should always follow local area guideline issued by government veterinary department with respect to species, age and season of deworming. Always use permissible products, following appropriate dose and procedure of administration as directed by supervising veterinarian.

While spraying or dipping etc. for control of external parasites ensure scale of operation by involving maximum number of farmers in a given area. One should take all precautions for minimum negative effect on animal or immediate environment.

Deworming drugs should be rotated annually to avoid anthelmintic drug resistance.

Periodical laboratory screening of individual and pooled dung samples can be conducted to assess the parasitic load.

Aggressive preventative deworming treatment for entire herd of animal to maintain livestock health should be avoided where possible as same may cause resistance to all classes of deworming drugs. Selectively deworming only those animals that require treatment can serve the purpose. For example, since 'Anemia' indicates blood sucking external parasite infestations. FAMACHA scoring(a tool) can be used to identify extent of anemia in small ruminants. Dr. Faffa Malan developed a five color FAMACHA scoring chart that corresponds to a sheep or goat's bottom eyelid color.

(See picture, where available your instructor will demonstrate its use)

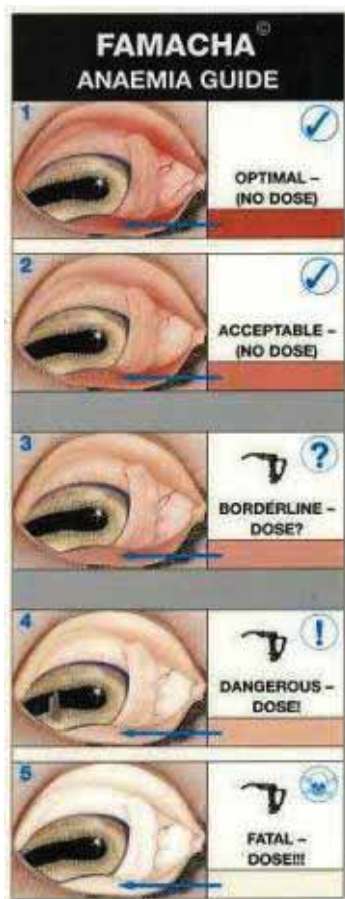


Fig 3.8.3 Anaemia guide

## Exercise



1.



A village farmer showed you the above picture of a diseased pig in his farm and requested your help. Make a presentation on how you will approach the case (Refer history taking, observation, reporting etc.)? What immediate advice will you give to the farmer?

Answer: -----  
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2. A disease prevention calendar helps the farmers to identify and remember, when it is time to perform preventive measures such as vaccination and de-worming. Work in groups; discuss with consultant veterinarian nearby to prepare a basic disease prevention calendar for your area separately for cattle, goat and poultry.

Answer: -----  
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3. There is often a need for a communal or community based strategy to prevent diseases. If many neighbors have badly managed poultry flocks, it is difficult to keep a healthy flock as mixing with those flocks might infect them. Work in groups to enact a short street drama to educate farmers on need of working together e.g. vaccination of an entire village on the same day! to prevent disease.

Answer: -----  
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4. Visit any project village of known NGOs promoting goat farming. Note what the organization is doing to improve the productivity of herds of goat within that village through general husbandry, nutrition management, parasite control, vaccination, and environmental management. How record keeping is helping the NGO to provide herd health service? Record use of any tools (e.g. use of FAMACHA chart, software etc.) and collect prepared or published goat herd health calendar (if any).

Answer: -----  
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5. Collect label / manufacturers instruction sheet of various vaccines as available in local market.

Answer: -----  
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6. Visit local pharmacy to collect details of products used for ecto-parasite control. Discuss manufacturer's instructions and environmental effect of chemicals used in these products?

Answer: -----  
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Notes



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**ASCI**  
Agriculture Skill Council of India

## 4. Veterinary First Aid

Unit 4.1 – Emergency conditions and pre-disposing factors.

Unit 4.2 - Common first aid measures

Unit 4.3 – Handling superficial wounds / Abscess

Unit 4.4 – Handling fractures and horn injuries

Unit 4.5 – First aid during animal birth.

Unit 4.6– Handling poisoning

Unit 4.7 – Administration of medicine

Unit 4.8 – Safety measures to be taken during first aid



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Understand the meaning of livelihood
2. Discuss the importance of livestock and poultry farming in rural livelihood.
3. Better understand institutions and resources of your village.
4. Understand the role and responsibility of Animal Health Worker
5. Understand the importance of continuous learning and identify referral support system.

## UNIT 4.1: Emergency conditions and pre-disposing factors

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand the situations that need emergency care and conditions that pre-dispose animals to such situations. You will also learn about symptoms and basic first aid for these situations.

### 4.1.1 Emergency conditions and pre-disposing factors

The emergency conditions include acute infectious and non-infectious diseases, accidental and birth related problems. Inadequate preventive care, bio-security, faulty feeding is the most prominent predisposing factor for infectious and non-infectious conditions. Environmental and man-made factors are responsible for accident related problems. A combination of factors (Genetic, Breeding, Feeding, wrong presentation etc.) is responsible for birth related emergency condition.

The following are examples of few emergency conditions in farm animals along with pre disposing factors, symptoms and suggested treatments. Practice with supervising veterinarian is essential before you can independently handle some of the situation.

Name of the condition / Description	Predisposing Factor / Cause	Symptoms / Treatment
<b>Bloat / Tympany</b> (Accumulation of gas in the first two compartments of a ruminant's (e.g. Cattle, Goat) stomach. There are two types of bloat: gassy bloat and frothy bloat	<p>Gassy boat may occur due to obstruction of the passage by which food passes from the mouth to the stomach. Unusual postures (lateral recumbency or lying on its side for long) can cause gassy bloat. Gassy bloat is also associated with diseases like Milk fever, tetanus etc.</p> <p>Frothy bloat is mostly due to over eating of grain / legume grass. Eating of fermented or moldy feed and poisonous plants.</p>	<p><i>Symptoms:</i>            Rumen is distended (on left side), Tongue hanging out of the mouth, difficult and noisy breathing or Open mouth breathing. Animal is restless and shows signs of pain.</p> <p><i>First aid:</i>            Passing a stomach tube is the best treatment for gassy bloat. (You need to learn this!). Once gas is released, cause of the obstruction should be looked for (Take help of supervising vet) Passing the tube will also distinguish between gassy and frothy bloat. If it's gassy bloat a stomach tube passed into the rumen will allow the gas build-up to escape through the tube. No such gas is seen in frothy bloat.</p>

Diarrhea	Wrong feed or sudden change of feed besides parasite infestation and infection with other disease causing organisms.	<p>For frothy bloat, antifoaming agents (e.g. Tymplex -100 ml, Gastina -100ml, Tymfree, Himbloat etc.) are available in the market.</p> <p><i>Example of Traditional Medicine:</i></p> <p>Hing (asafoetida) 10g+Black Salt 20g + Tulsi (Holy basil) seed 5g +adrak (Ginger) powder 5g in water given orally</p> <p>Note: In life threatening cases your supervising veterinarian may decide to use cannulation of rumen or conduct an operation (rumenotomy)</p> <p><i>Symptom:</i></p> <p>Soft and watery feces with frequent defecation. Bad smell of feces, feces with blood or mucous, dehydration, Fever in case of accompanying infection with bacteria or virus.</p> <p><i>First Aid</i></p> <p>If the diarrhea continues for more than two days and the body temperature is high, you should ask your supervising veterinarian for help. He may suggest treatment with antibiotics or by sulpha drugs. Herbal branded products are also available in market (e.g. Diarex Vet). Start giving rehydration fluid immediately (mix six teaspoons of sugar and half a teaspoon of salt with 1 liter of clean, warm water). Drench rehydration fluid (500 ml for sheep or goats) four times a day for 3 days. Larger animals require more fluid, 5% of body weight 2 times per day.</p> <p><i>Example of Traditional Medicine:</i></p> <p>Powder of half ripe bael (stone fruit) @15-25 g per kg body</p>
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<p>Simple Indigestion / Anorexia (Loss of appetite)</p>	<p>Is typically related to an abrupt change in the quality or quantity of the diet.</p>	<p>weight in calves.</p> <p>Note: When diarrhea is suspected of resulting from parasitic or worm infestation, treatment for same should be initiated after recovery from diarrhea.</p> <p><i>Symptom:</i> Loss of appetite, decreased food consumption. Slow or week ruminal movements (in ruminants)</p> <p><i>First aid:</i> Animals can be given drugs under category of stomachics / rumenotonics (Drugs that promote functional activity of stomach by increasing secretion and motility) e.g. Rumentas, Appetonic Vet, Liv52 Vet, Rumbion, Ruchamax N, Bovirum Bolus etc. based on local availability and experience on product performance.</p> <p><i>Example of Traditional Medicine:</i> Mixture of powdered seed of ajwain + Salt 20g +20 g molasses given twice daily orally.</p>
<p>Constipation</p>		<p>Note: In case of accompanying suspected infection consult veterinarian supervisor for treatment with antimicrobial drugs</p> <p><i>Symptom:</i> Constipated animals cannot defecate or they pass very hard droppings with difficulty.</p> <p><i>First Aid:</i> Constipation is treated by giving an enema (Warm clean soapy water is injected into the rectum). Epsom salts (Magnesium sulphate) or commercially produced oils can</p>

Choke (feed in the gullet)	This happens when large or dry pieces of feed become stuck in the gullet (oesophagus)	<p>be given by mouth to relieve constipation.</p> <p><i>Example of traditional treatment:</i></p> <p>Decoction (concentrated liquor resulting from heating or boiling a substance) of 100 g haldi (Turmeric) powder in a liter of water given daily for 2-3 days.</p> <p>Choke in ruminants cause bloat (tympany). The obstruction must be removed. The best way to remove the obstruction is to push upward toward the mouth from the outside on the left side of the neck. Another way is to press hard on the top of the mouth with your fingers to make the animal open its mouth. Then pour a small amount (10 - 20 ml) of oil into the mouth of the animal or pass a stomach tube down the gullet.</p>
<p>Impaction</p> <p>(It refers to the failure of digestion, slow passage and accumulation of feed in one or more of the stomach compartments in ruminants leading to constipation or absence of dung)</p> <p>Two types of impaction: Primary &amp; Secondary</p>	<p>Excessive feeding of poor quality roughages or Ingestion of indigestible substances like rope, polyethylene etc. leads to primary impaction.</p> <p>Injury and inflammation of the gut or associated organs (e.g. due to foreign body like nail etc. in feed) which decreases the gut motility leads to secondary impaction.</p>	<p><i>Symptom:</i></p> <p>Scant or absence of dung, abdominal pain. Distension of abdomen. Restlessness and frequent getting up and laying down. Sudden loss of appetite, thirst and dehydration is seen in some animals.</p> <p><i>First Aid:</i></p> <p>You can start the supportive therapy in form of intravenous saline to check dehydration. Your supervising veterinarian based on severity and proper diagnosis type of impaction will decide the course of action. Treatment of true rumen impaction generally consists in giving purgative (medicines that causes evacuation of the bowels). One should first give oily purgative or laxative than saline purgative. The purgative should be given after fully</p>

Shock	Injury, stress, blood loss, fluid loss etc.	<p>hydrating the animal (Intravenous saline). Saline purgative includes: magnesium sulphate, sodium sulphate etc.) Signs of shock include rapid pulse or breathing, body temperature drops below normal levels (some animals may shiver and birds fluff their feathers). There are pale/white gums. The signs of shock are not always obvious and can develop over time. An animal in shock is usually still, quiet and cold.</p> <p><i>First aid:</i></p> <p>Try to reduce stress (e.g. by covering the animal's eyes), stop any visible signs of bleeding and make sure that the animal is kept warm and quiet. External bleeding can be treated by applying direct pressure to the wound until it stops. For severe bleeding, a pressure bandage can be applied, and should the bleeding come through the bandage, another bandage should be applied over the top. Never take the first bandage off.</p> <p>Your supervising veterinarian will decide on appropriate intervenous fluid therapy to further address shock situation.</p>
Sun stroke	High environmental temperature and high humidity. Animal kept in poorly ventilated house.	<p><i>Symptom:</i></p> <p>Sudden rise of body temperature, pulse, respiration rate while sweating and salivation are almost absent. There may be panting, frothing at the mouth, tongue hanging out, irregular gait etc. The animal becomes dull, depressed, dehydrated and thirsty.</p> <p><i>First Aid:</i></p> <p>Keep the animal in cool place</p>

Lightning stroke / Electrocution	Lightning, fallen electrical transmission wires etc.	<p>with enough drinking water. Apply cold packs. Give normal saline intravenously. Animals should be given enough glucose and protein (Bypass protein supplement in cattle) as supportive treatment to maintain body requirement.</p> <p><i>Symptom:</i> In cases where the animal survives residual nervous signs (e.g. depression, sensitivity, blindness, paralysis) may persist for days or weeks or be permanent. Singe marks are common on medial (inside) side of legs.</p> <p><i>First aid:</i> Symptomatic and handling of shock.</p>
Burn injuries	Exposure to thermal, chemical or electrical burns	<p>The aim of first aid should be to stop the burning process, cool the burn (Cold water or a cold compress i.e. wet cloth needs to be applied to the burn) and cover the burn area with sterilized bandage. The animal may also need to be treated for shock, pain and dehydration. Acid burns should be treated with an alkali like washing soda 10gm in one liter of water and burns caused by alkalies must be treated with equal parts of vinegar and water. The animal should be offered plenty of water.</p>
Insect bite / stings	NA	<p><i>First Aid:</i> Apply cold compress on the affected areas. Anti-allergic drugs (e.g. cadistin injection etc.) / Pain killers can be administered based on severity.</p>
Eye injury	Foreign objects, smoke	<p>A foreign object in the eye can cause discharge and redness, with the animal rubbing at the eye.</p>

Snake bite	NA	<p><i>First Aid:</i></p> <p>The eye can be opened to examine it, and the foreign material can be washed out with clean water. If this doesn't work, attempts can be made to remove the object if possible. However, one should not try and remove if the object is penetrating the globe. Any attempt to remove any foreign material by means other than flushing (using sterile saline or fresh water) in a conscious animal is likely to risk additional injury to the eye. Eye injuries resulting from smoke should be treated by flushing the eyes with water or saline. Putting a drop of olive, castor or cod liver oil in the eye can help in removing dirt. Putting a little sugar in the eye, will cause tears which may wash out dirt from the eye. Check for commercial eye drops or ointment to treat red, swollen eyes.</p> <p><i>Symptoms:</i></p> <p>Animals are normally bitten at the head or legs. Death is usually not seen in large animals because of their body size. Initially there is local swelling and pain followed by excitement and anxiety. The animal shows dilatation of pupil, salivation, hyperesthesia, (a state of abnormally increased sensitivity to stimuli) tetany (intermittent muscular spasms), depression, incoordination (lack of coordination, especially the inability to use different parts of the body together smoothly and efficiently.), recumbancy (lying on its side) and paralysis. Bacterial contamination of the</p>
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		<p>wound may lead to fever.</p> <p><i>First Aid:</i></p> <p>Clean the wound with soapy water. Apply suction to the wound (suggested within 15 min of bite). About 15-20 cm above the bite, tourniquet should be applied to prevent spread of venom. The bite may be incised or pressure bandage be applied on the site of the wound. Your veterinary supervisor may prescribe:</p> <ul style="list-style-type: none"> <li>a) Antivenom injection @1unit/70kg bodyweight in adults and 5 units in small animals.</li> <li>b) Broad spectrum antibiotics to prevent infection of the wound.</li> <li>c) Fluid therapy to overcome shock</li> <li>d) corticosteroid and antihistaminic.</li> </ul>
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## Exercise



1. Mention any five emergency conditions with their symptoms

Answer: -----

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Notes



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## UNIT 4.2: Common first aid measures

### Unit Objectives

At the end of this unit, you will be able to:

- Learn some of the common first aid measures

### 4.2.1 Common measures

Some of the common first aid measures that should be employed in field conditions include:

1. Separation of the affected or sick animal from the rest of the herd.
2. Ensuring adequate rest and environmental comfort.
3. Application of ice cubes on the udder surface and preventing calf from sucking infected teat (in suspected cases of infection of udder)
4. Washing mouth and feet with antiseptic solutions and application of glycerin over lesions (in cases like FMD)
5. Provision of comfortable bedding materials for recumbent animals.
6. Bringing the animal to sternal recumbency (in suspected case of milk fever) and possible shifting of recumbent cows from slippery floors to non-slippery areas.
7. Erection of temporary shelter to protect from sun light (in conditions when affected animals are lying in the open ground)
8. Protection of prolapsed organ, hanging foetal membranes from contamination and from dogs and other animals. (Protruding membranes should be tied in a knot to prevent them touching the hocks)

### 4.2.2 CPR for animals

As in humans, cardiopulmonary resuscitation (CPR) is an emergency technique used when an animal has stopped breathing or has no heartbeat. Application of CPR is largely limited to small / newly born animals. It involves a process to do rescue breathing and chest compressions, by following three basic principles or ABCs of CPR– Airway, Breathing and Circulation.

*Class assignment:*

With the help of instructor discuss ways to save new born calves / kids that are not breathing properly.

(Tips for the assignment)

- As soon as a calf is born, its mouth and nostrils should be cleared of mucus and afterbirth. Straighten out the calf's neck so that the airways are not obstructed.
- Take a straw and insert it an inch or two into the calf's nostril. Move the straw in and out
- Hold the mouth of the calf open, with the calf's tongue on the floor of the mouth. Blow down the calf's throat. Your breath contains about 4- 5% carbon dioxide, while normal air contains much less. Blowing carbon dioxide into the respiratory tract of the calf will act as a stimulant to initiate breathing. When performing this technique, your mouth should not touch the calf's.
- Briefly hold the calf up by its hind legs and pour cold water onto the chest and head regions. One can also try pouring little cold water into the ear (cold shock may initiate breathing).
- Applying intermittent pressure on the calf's rib cage with the calf lying on its side: Pressure can be applied simultaneously to both sides of the rib cage if you position the calf so it is lying on its chest. Applying pressure to the rib cage forces air out of the lungs. Releasing the pressure allows fresh air to enter the lungs. Request an assistant to blow down the calf's throat at 15-20 seconds intervals. Artificial respiration can be continued for 5-10 minutes. (If it appears that most of the air is going into the stomach, pinch off the esophagus in the neck with your fingers. This will force the air into the lungs)
- Heart massage can be given by laying the calf on its side and compressing the area of the chest between the front legs with your hand approximately once per second.
  
- The calf may be weak after normal breathing is established. Make sure the calf gets colostrum via a tube feeder as soon as possible. If the calf is chilled, supplemental heat is extremely important.

**Safety tips:**

When working with weak or sick calves, one should always be aware of the potential of human exposure to infectious diseases. Where possible, use commercially available devices for mouth-to-mouth resuscitation.

## Exercise



1. Mention the common First aid measures in the field condition

Answer: -----

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2. What is CPR? Explain.

Answer: -----

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Notes



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## UNIT 4.3: Handling superficial wounds / Abscess

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand ways to handle wound / abscess

### 4.3.1 Wounds

Wounds are caused by cuts, burns, bruises, bite, falling down from height and / or hitting into objects.

In terms of time duration, wounds can be classified as:

- Fresh wound
- Chronic wound

A fresh wound is a recent wound. Fresh blood might be oozing out of such wound. Chronic wounds are those which are infected with germs with production of pus. Many a time flies lay eggs on such wounds and from these eggs maggots (worms) develop.

The first step in wound management is assessment of the overall stability of the animal. Obvious open wounds can detract attention from other potentially life-threatening problems. After initial assessment, the animal should be stabilized. In field condition active bleeding can be controlled with direct pressure. Treatment for any local wound should be guided by the fundamentals of debridement (process of removing dead tissue, foreign material from wounds), infection or inflammation control, and moisture balance.

As part of the normal healing process wounds release fluid (or exudate). Too much exudate (maceration) or too little exudate (desiccation) can interfere with wound healing; therefore, it is important to manage moisture levels, particularly in chronic wounds.

First aid for fresh wound

- If necessary, trim the hair around the wound.
- Remove any foreign material from the wound
- Clean or irrigate the wound with disinfectant solution
- Dry with clean cotton.

At this point, a decision must be made whether to close the wound by suturing or to manage it as an open wound. Not all wounds can be sutured. Considerations in this case include the availability of skin, healthy tissue around the wound for closure and the level of contamination or infection. Generally suturing is suggested only in case of wounds not more than 12 hours old. If the wound is left open, it should be managed for optimal healing.

If decided to continue management as open wound:

- Apply antiseptic ointment.
- Where possible, apply bandage. (The wound must be protected from further contamination or trauma by covering it with a sterile, lint-free dressing)
- It is advisable to apply fly repellent around the wound after dressing.

Depending on the extent of the fresh wound, and likely chance of infection you may seek suggestion of supervising veterinarian for possible course of antibiotics and drugs to prevent inflammation or swelling.

In majority of field situations, you may come across chronic wound which is already infected. Presence of pus in the wound is an indication of infection. In such case, one should undertake

- Proper debridement (removal of dead tissues with clean forceps),
- Cleaning (flushing out pus with the help of syringe, application of hydrogen peroxide etc.)
- Local application of antiseptic ointment and fly repellent.
- Initiate antibiotic and other therapy as per veterinarian's prescription.

Your supervising veterinarian will prescribe broad-spectrum bactericidal antibiotic, (e.g. a first-generation cephalosporin, is generally recommended) along with drugs for inflammation and pain relief.

Wound cleaning or irrigation (using disinfectant solution) when performed properly, can aid in healing from the inside tissue layers outward to the skin surface. It may also help prevent premature surface healing over an abscess pocket or infected tract. The goal of irrigation is to clean the wound while avoiding trauma to wound bed and minimizing risk of driving bacteria further into the wound bed.

A chronic wound requires daily / periodic cleaning until it is healed. One should ensure moisture balance (as indicated above) during such cleaning as indicated above. Please note the following:

- Thin and watery exudate (fluid) containing some blood is a normal part of wound healing. Assess the level of exudate (low, medium or high) and apply a suitable dressing to absorb the excess moisture.
- Wounds that are dry or have very low levels of exudate need to have moisture added (hydration). Select a dressing that can give back fluid to the wound so that healing is stimulated.

In cases, where a chronic wound is infested with maggots, one should kill maggots using turpentine oil, naphthalene balls etc. (see commercial products like Zymagout-WH, Lorexane spray etc.). Within 5-10 minutes of application of above medications, maggots should drop off. Additional maggots should be removed manually using forceps. Application of antiseptic ointment and fly repellent along with antibiotic injection (as prescribed by supervising veterinarian) will help in dealing with infection and further maggot infestation.

Example of traditional Medicine for wound management: (Source: Ethnoveterinary medicine in Asia - An information kit on traditional animal health care practices - General information, IIRR (1994)

- To stop bleeding apply 2 handfuls of hot, cooked rice to the wound.
- Pound dry turmeric (*Curcuma domestica*) rhizome with water to make a paste. Apply on the wound till the wound heals.
- Boil a handful of neem or guava leaves in 1 liter of water for about 15 minutes. Let cool down and sprinkle on and around the wound

#### *Class assignment:*

Collect details of locally available commercial products under category such as anti-inflammatory cream, antibiotic ointment, Fly repellent, disinfectant solution for wound irrigation etc.

### 4.3.2 Abscess

Abscesses usually appear on the skin where there has been a wound. Some diseases cause abscesses under the skin or deep inside the body.

Abscesses often start as hard, hot swellings which later become softer. The lumps are full of pus. An abscess has a dark patch with no hair where the skin becomes thin. It may burst at this point.

Abscesses often burst and heal with no treatment. There is no need to give antibiotic injection to animals with abscesses unless they have fever or are sick. Antibiotics can stop abscesses becoming soft and bursting. They make an abscess grow a thick wall around itself and remain for a long time.

If an abscess is not soft and ready to burst, put a cloth soaked in hot water on it for a few minutes several times a day until it becomes softer and ready to burst. Or you may wait until it is soft, and then cut into it to drain the pus.

Make an incision into the abscess at the lowest point so that the pus can drain easily. Squeeze it until the pus stops coming out. Sometimes clean blood comes out after the pus. This is good sign that you have drained all the pus.

When you have squeezed out all the pus, wash out the abscess. Use an old syringe without a needle filled with water or antiseptic to wash out any pus that is left. Washing out the abscess two or three times a day is enough.

Some abscesses need to drain for a few days before all the pus comes out. To stop the hole, you made from closing, soak a long strip of bandage material in antiseptic and push it through the hole. Leave the short piece hanging out. Pull a short length out every day until the abscess has drained.

Consult with the supervising veterinarian for prescription of antibiotic or sulfa drug to be given by injection or orally for 3 -5 days.

**Important note:** Do not open abscesses of the lymph nodes (Refer section 2.1.2 Organ system for location of lymph nodes)

**Safety tip:** Wash your hands after treating abscesses and clean any equipment you have used.

**Example of traditional Medicine for treating abscess:** (Source: Ethnoveterinary medicine in Asia - An information kit on traditional animal health care practices - General information, IIRR(1994)

- Grind a handful of fresh neem leaves to make a paste. Apply it on the affected area as a poultice.
- Grind a handful of Odina wadder (sesharam) leaves and mix with half this amount of vegetable oil. Apply it on the abscess.
- Tie a Piper betle (betel) leaf over the abscess to drain it.
- Make a paste from 5 teaspoons of turmeric rhizome powder and 5 teaspoons of water. Apply on the abscess.
- Rub a block of *Pterocarpus santalinus* (red sanderswood) against a rough stone to make a powder. Make a paste from 5 teaspoons of this powder with 5 teaspoons of water and apply on the affected area.
- Mix equal amounts of salt and water and pour on the abscess.
- Mix equal amounts of slaked lime (calcium hydroxide) and water. Mix this with an equal amount of lemon juice and apply on the abscess.
- Crush 10-20 fresh *Mentha piperita* or *M. cordifolia* opiz (mint) leaves and apply on top of the abscess as a poultice.
- Boil 1 part of young, chopped leaves of *Spondias pinnate* with 2 parts of clean water. Boil for 1015 minutes. Use the decoction to wash the abscess.

## Exercise



1. Explain the First aid treatment for fresh wound

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2. Explain the Traditional medicine for treating abscess

Answer: -----

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Notes



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## UNIT 4.4: Handling of fractures and horn injury

### Unit Objectives

At the end of this unit, you will be able to:

- Understand ways to manage fractures and horn injuries in farm animals.

### 4.4.1 Fractures

A fracture is a broken bone or a break in the continuity of a bone. This is accompanied by damage to surrounding soft tissues, blood vessels and nerves. Fractures can be simple without any wound at the surface and broken at only one place. It may be compound if the bone is fractured at more than one place. It is called open if the wound extends through the skin with major bone injury, which can be both simple and/or compound. An open fracture may also lead to infection.

When there is a fracture, we need to handle the animal very carefully to avoid further injury and locate the right place of fracture. In some cases it may require an X-ray to diagnose. Some symptoms can easily be seen, such as:

- Pain at the site of fracture. The animal reacts strongly when the area is manipulated.
- The animal cannot bear weight on the affected side and shows difficulty in walking.
- There is deformity at the site of fracture
- Hot and painful swelling near the location
- Crepitus (sound produced by fractured bone) can be heard.
- The affected area becomes non-functional.

Most fractures will heal if the fractured ends are placed properly, but it also depends upon the location and complexity. Immobilization of the fractured part is the most important aspect of treatment. Major steps to be followed during the treatment of fracture are outlined below:

- Animal should be restrained properly with proper bedding materials.
- Clean the wound, remove any dead tissue. If the fracture is fresh and bleeding, one needs to control the bleeding first.
- Set the bone in its original position with proper adjustment, otherwise there will be deformity after the fracture heals.
- Use a splint or cement plaster cast if necessary. In a village setting, a simple bamboo splint is generally used for immobilizing the fracture. Bamboo splints are less expensive, easy to prepare and lighter than plaster casts. They can be removed easily to check and treat wound

in compound fractures. A bandage should be applied under the splint for padding and to protect the tissues and skin from further injury.

*Making bamboo splints:*

Collect a few pieces of bamboo and make the sides smooth. Tie the pieces with jute rope on both ends, leaving about 10 cm. One end of the splint should be narrower than the other to make it easier to immobilize the fracture, especially on leg fractures. Provide supportive care to the animal by frequently cleaning the wound, by turning the animal frequently, by providing good quality food and by protecting the wounded animal from other animals.

**Note:** In high value animals it is advisable to seek help of veterinarians in handling fracture.

### 4.4.2 Horn injury

Separation of the horny cover of the horn core sometimes happens due to traumatic injury. This is called avulsion of horn. When the horn core is injured there will be bleeding from nostril on the corresponding side. The injury should be washed with cold antiseptic lotion and the horn protected by means of a pad or bandage. Tincture benzoin should be poured on the injury. Application of well mixed mixture of fresh semi-solid lime (Calcium carbonate) and palm jiggery can be of help.

### Exercise



1. How do you handle fractures and horn injury?

Answer: -----

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## UNIT 4.5: First aid during animal birth

### Unit Objectives

At the end of this unit, you will be able to:

- Learn first aid required during animal birth.

### 4.5.1 First aid during animal birth

The birth related difficulties commonly encountered are dystocia, prolapse of vagina or uterus and retention of placenta.

Dystocia means difficulty in birth (parturition). In case of dystocia in small animals, attempt should be made to keep the animal quiet and comfortable. If needed gentle traction to the foetus may be applied to aid delivery. It is better not to introduce hands/fingers per vagina and inform supervising veterinarian for aid.

First aid during calving should be undertaken with utmost precaution. Hands and ropes used for traction should be clean. Finger nails should be trimmed properly to avoid injury. The first aider should attempt only simple conditions like flexion of legs but should never apply traction without supervision of veterinarian.

Prolapse of vagina occurs towards late pregnancy or immediately after calving and prolapse of uterus occurs after calving. The organ hanging outside should be washed with potassium permanganate solution (1 in 10000) then covered in a clean cloth. The hind quarters of the animal should be at a higher level. This can be achieved by raising the ground below the hind feet. In retained placenta cases, the hind quarters of the animal should be washed with warm water taking care to see that the hanging membranes (placenta) does not get entangled. Isolate the animal and seek help of your supervisor if placenta does not fall even after 24 hours.

Notes



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## UNIT 4.6: Handling poisoning

### Unit Objectives

At the end of this unit, you will be able to:

- Learn ways to handle poisoning in case of farm animals

### 4.6.1 Pesticide poisoning

Livestock may be accidentally exposed to toxic amounts of pesticides in their feed or by improper mixing of sprays or dips for external parasites. Symptoms vary with different pesticides.

Always refer the label of suspected pesticide container for signs and treatment of toxicity.

#### **Chlorinated hydrocarbon toxicity:**

Symptoms:

Animal shows nervousness and become excited. This is followed by shivering, trembling and convulsions.

First Aid:

If the exposure was to the skin, try to rinse off the pesticide with soap and water. If exposure was by mouth, animal should be administered with magnesium sulphate and activated charcoal (@ 1 g m for every 20 kg of body weight) by mouth. Feeding of activated charcoal daily in feed can be continued for two weeks to absorb any remaining toxin from the gut.

#### **Organophosphate (OP) toxicity**

The symptoms include:

1. Difficult breathing
2. Sign of 'SLUD': Salivation, Lacrimation (tears coming from eyes), Urination and Diarrhea.
3. Possible convulsions (a sudden, violent, irregular movement of the body, caused by involuntary contraction of muscle)

Treatment: Atropine sulphate intra muscular injection can be given @ 30mg / 45 kg body weight (in cattle) and 50 mg / 45 kg body weight (in sheep and goat). The injection may have to repeated every 4-5 hours if symptoms return.

## 4.6.2 Plant poisoning

It has been estimated that in India there are about 700 poisonous species of plants. Among these few plants are commonly encountered during grazing of livestock which can produce lethal toxicity to animals.

### Cyanogenitic plants:

Cyanide in the form of cyanogenic glycosides is present in these plants. Consumption in large quantity within a short period of time can cause cyanide poisoning. Some of the plant species are Sorghum sp ( Jowar – immature ), Prunus sp ( Aadu / Apricot leaves ), Eucalyptus sp ( Nilgiri), Sugarcane leaves etc. Cattle and buffaloes are more susceptible. They are less toxic to sheep and goats.

Symptoms:

Death may be preceded by breathlessness or difficulty in breathing, staggering gait, drooling of saliva, bright red mucosa and tremor ( shaking movements).

First Aid

Prevent further exposure. Consult with supervising veterinarian for intravenous administration of sodium nitrite and sodium thiosulphate.

### Lantana camara:

In Hindi this plant is known as *Raimuniya*, *Chaturang*, *Khaneri*, *Dhani-dadia* etc. It contains a toxic principle called 'Lantadienes'. All farm animals are susceptible especially cattle, sheep and goat.

Symptoms:

Ruminal stasis (cessation of normal rhythmic contractions for more than 2 minutes), constipation, swollen eyelids and photosensitization in light skinned animals.

First Aid

The animal should be kept away from sunlight. Activated charcoal (@ 1 g m for every 20 kg of body weight) should be administered by mouth. Contact supervising veterinarian who will prescribe drugs to protect liver and to cure allergic reactions.

### Nitrate and nitrite poisoning:

Nitrate containing plants ( turnip, linseed, sugarbeet, common oat and maize), fertilizers and feed, drinking of nitrate rich water are some of the sources of this poisoning.

Ruminants ( Cattle, buffaloes, sheep and goat ) are affected with nitrate poisoning. Non ruminants ( Pig, horses, dogs ) are susceptible to nitrite due to absence of rumen organisms ( microflora ).

**Symptoms:**

Rapid respiration, salivation, abdominal pain, weakness, rapid and weak pulse, bluish mucus membrane, convulsion and death.

**First aid:**

Remove the source of poison. Your supervising veterinarian can give intravenous injection of methylene blue solution in isotonic saline.

You can search for details of other plant poisoning such as:

- Castor plant or seed (*Ricinus communis* Hindi Name: Arandi),
- Dhatura (*Datura Stramonium*)
- Bracken fern (*Pteridium aquilinum* Hindi Name: Pharna)
- Bush morning glory (*Ipomoea carnea* Hindi Name: Besharam)
- Congress grass (*Parthenium hysterophorus* Hindi Name: Gajar Ghas)
- Indian Sorrell (*Oxalis* Sp. Hindi Name: Tinapatiya, Amrulsak)
- Sweet pea (*Lathyrus* sp. Hindi Name: Khesari Dal)

**Exercise**

1. What is pesticide poisoning?

Answer: -----  
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2. What are the clinical signs of Organophosphate (OP) toxicity?

Answer: -----  
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Notes



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## UNIT 4.7: Administration of medicine

### Unit Objectives

At the end of this unit, you will be able to:

- Learn methods of administration of medicine to animals

### 4.7.1 Common conversions

Following knowledge of common measures are important for administration of medicine as per veterinarians' prescription.

15 drops = 1ml = 1cc

1 teaspoon = 5 ml = 5cc

1 tablespoon = 15 ml = 15cc

1 cup = 240ml

### 4.7.2 Calculating body weight of animals.

Knowing the body weight is important for calculating the dose of medications. Body weight in animals can be determined easily using various techniques. In non-commercial farm situations, you can calculate weight of individual animals with reasonable accuracy by taking two body measurements (body length and heart girth) and applying some simple math. Use the following formula (Shaeffer's formula) to calculate the body weight of animals.

Heart girth (inches) x heart girth (inches) x body length (inches) divided by 300 = weight in pounds

(2.2 pounds = 1 Kilogram)

Heart girth is the circumference of the chest of an animal and body length is the distance in inches from the point of the shoulder to the point of the rump.

### 4.7.3 Drenching

The application of liquid preparation through the mouth is called drenching. Hold the head level so that the medicine does not go into the lungs. One can use a bamboo tube, a soft drink bottle, a wine bottle or a bottle gourd. Use a dropper or straw for poultry

## 4.7.4 Topical application

### ***Poultice or paste***

A poultice is a soft, usually heated preparation that is applied to a sore or inflammation.

### ***Fomentation***

A fomentation is a warm, moist substance (such as a wet cloth) applied to the affected parts of the body. It is used to ease pain and inflammation

### ***Compress***

A compress is similar to a fomentation, but is always dry

### ***Direct application***

Rub the preparation directly on the affected part

### ***Nasal application***

Drop medicine directly into the nostril or apply it as vapor.

### ***Vaginal application***

This application is used in cows and sows that have an infection of the birth canal, for example: after retained placenta or other birth related difficulties.

To apply solid medicines to vagina

1. Clip your nails, clean your hands thoroughly and apply vegetable oil to them as a lubricant.
2. Clean the animal's vulva with soap and warm water.
3. Take the medicine in one hand and cup this hand into a cone-shape.
4. Insert this hand into the vagina when the muscles of the birth canal are relaxed (for instance, between contractions during birthing). Leave the medicine in the vagina and slowly pull your hand out.

To flush the vagina with liquids

1. Clean and wash the stalk of a papaya leaf and lubricate its tip with vegetable oil.
2. Insert the stalk slowly about 10 cm deep into the vagina.
5. Pour the liquid medicine into the vagina through the hollow stalk until the liquid flows over.

### ***Anal application***

1. Shape the medicine into a small ball.
2. Carefully push it into the animal's anus. If this is difficult, dip the ball into the water or oil before inserting it in the anus.

### **Application in the eye:**

Use medicine dropper and apply prescribed remedy directly into the eyes.

### **Fumigation:**

Fumigation is the use of smoke / gas to drive away insects / germs.

## 4.7.5 Injections

Injections are given under the skin (subcutaneous; S/C), or in the muscle (intramuscular; I/M) or into the vein (I/V or intravenous). IV injections should be administered under supervision of veterinarian.

There are specific locations within the animal body for administration of various types of injections. Your training instructor will make practical demonstration of the same.

### **Intramuscular (I/M) Injection**

- Collect required materials and drugs.
- Restrain the animal in the proper way
- After dose determination, pull the drugs into the syringe.
- Select the proper place to be injected
- Sanitize the place with alcohol, or tincture of iodine
- Insert the needle into the muscle.
- Fit the syringe with the needle.
- Check for blood by drawing back on the plunger. Be sure that the needle is not improperly placed into a vein or artery.
- Inject drug slowly and carefully
- Pull out the syringe with needle and massage the site of injection.

Note: Follow product label instructions for withholding the animals from slaughter and preventing people from drinking their milk.

### **Subcutaneous (S/C) Injection**

- Collect the required materials and drugs.
- Restrain the animal in the proper way.
- After dose determination, pull the drugs into the syringe
- Select the proper place for injection by picking up a loose fold of skin from the neck or shoulder.
- Inject the medicine under the skin, which should go easily.
- After pushing all the medicine from the syringe, remove the needle and give a gentle massage.

**Intramammary infusion**

Intramammary infusion is a very important part of mastitis treatment and prevention. To increase the effectiveness of treatment, proper infusion method needs to be applied.

- Udder should be clean and dry and completely milked out.
- Scrub the end of teat using cotton soaked in 70% alcohol
- Remove the cap from the infusion tube.
- Insert the teat cannula into the teat through the distal opening of the teat (where the milk comes out).
- Gently infuse the contents of the infusion tube.
- Gently massage the teat and udder, and again clean the outer part by dipping.

Note: You should educate animal owner to follow the drug manufacturer's instructions related to preventing people from drinking the animal's milk during the treatment.

**Exercise**

1. What are the important phases of Medication?

Answer: -----

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## Unit 4.8: Safety measures

### Unit Objectives



At the end of this unit, you will be able to:

- Learn about safety measures to be adopted during first aid

### 4.8.1 Safety measures

Injured animals must be approached carefully, and one should first take precautions for their own safety because any animal that is injured or in pain may bite or scratch. Using a muzzle is often a prudent safety measure where possible. Placing a light towel or cloth over the animal's head can decrease its awareness of nearby activity or noises that may cause fearful and aggressive reactions. One should give full concentration on the animal being handled without being distracted by other activities. Always leave yourself an escape route while working with injured animal.

When working with weak or sick animals, one should always be aware of the potential of human exposure to infectious diseases.

Notes



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## 5. Assisting government in animal disease control



Unit 5.1 – Some important concepts.

Unit 5.2 – Introduction to disease surveillance and monitoring.

Unit 5.3 – Livestock Markets.

Unit 5.4 – Cleaning and disinfection of premises.

Unit 5.5 – Culling and disposal of animals.

Unit 5.6 – Animal disease reporting.

Unit 5.7 – Leadership for local resource mobilization.



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Appreciate the importance of national / state level disease control programs.
2. Effectively contribute to success of state and national programs by participating in various activities.

## UNIT 5.1: Some important concepts

### Unit Objectives

**At the end of this unit, you will be able to:**

- Learn some basic concepts needed to understand and appreciate state or national level disease control programs.

### 5.1.1 Concept of disease risk and risk analysis

Likelihood of an uncertain event or hazard occurring is called 'Risk '. Risk in the context of a particular animal disease is the likelihood of incidence or outbreak of that disease. Factors that change a risk (increase or decrease of likelihood of incidence) are called risk factors.



For example, if we blindly walk through an intersection we risk being struck by a car. By looking both ways before crossing we can reduce our risk of being struck by a car. Not looking both ways before crossing the intersection is a risk factor for being struck by an automobile. Risk factors don't guarantee the outcome, but they are good predictors of what to expect. It is possible to look both ways before crossing and still get hit by an automobile, or you may cross blindly and not get hit. But, in the long run, fewer people will be hit by automobiles if they look both ways before crossing.

Veterinarians through scientific means conduct risk assessment of any animal disease and suggest factors that can increase or decrease the risk.

The benefits of controlling risks must be more than costs. Proper risk assessment helps in deciding investments and in developing a preparedness plan (risk management plan) with adequate financial

and other resources. A developed plan is mostly policy or rule based and it is mandatory for all to follow the plan.

During the designing and implementation of a risk management plan, government agencies continuously collect information and opinion from affected people. Animal Health Workers / veterinary assistants assist field veterinarians in not only collecting such information but also in educating farmers and general public about the risk factors in particular and government management plan in general.

### 5.1.2 Concept of One Health



*Fig 5.1.2 One Health Triad*

The One Health concept recognizes that the health of humans is connected to the health of animals and the environment.

One Health' is defined as "the collaborative effort of multiple disciplines — working locally, nationally, and globally — to attain optimal health for people, animals and the environment". It focuses on zoonotic, emerging diseases and issues like food safety and environmental hazards at the human-animal-ecosystem interface.

One Health is about people from many fields working together to keep humans and animals healthy and to protect the world in which we live.

An animal health worker / veterinary assistant, should always be open to assist other workers from health and environment related agencies.

### 5.1.3 Concept of bio-security

Under unit 3.4.2 we have learned about various ways of disease transmission. Bio-security is broadly the action taken to prevent the transmission of diseases.

It comprises of a set of management practices designed to prevent the introduction or spread of disease causing agents.

The four major component of biosecurity are:

1. Appropriate Management E.g. Vaccination, nutrition and animal welfare.
2. Isolation (Separation and confinement of suspected / diseased animals)
3. Traffic control (Includes both the traffic onto a farm and the traffic patterns within a farm)
4. Sanitation (The cleaning and disinfection of materials, equipment, and vehicles entering the farm and moving between farms)

The three basic principles of bio-security are:

1. Increase animals' ability to resist disease.
2. Minimize the number of contacts that might result in disease.
3. Eliminate the source of infectious agents.

Note that as an animal health worker / veterinary assistant you should always be careful not to introduce disease causing organisms while visiting from one client farm / farm household to another. Germs can transmit through clothes, footwear also.

Biosecurity should be managed in such a way that the cost associated with it are not greater than the damaged done by diseases.

### 5.1.4 Population, Sample and sampling

An animal health worker /veterinary assistants often joins research team of veterinarians that collect various information related to animal diseases. A simple understanding of what is a population, sample and the importance of following a given sampling method is necessary for basic understanding of purpose of given job. Such learning can also help in ensuring greater involvement.

'Population' represents the entire defined group of animals about which information on disease status is desired.

Sample is the proportion or part of the population from which information is gathered.

It is possible to observe or collect information from the entire population. However, it is often costly to do so and would take a great deal of time. We could take a sample of this population and use this sample to draw inferences about the population under study, given some conditions .

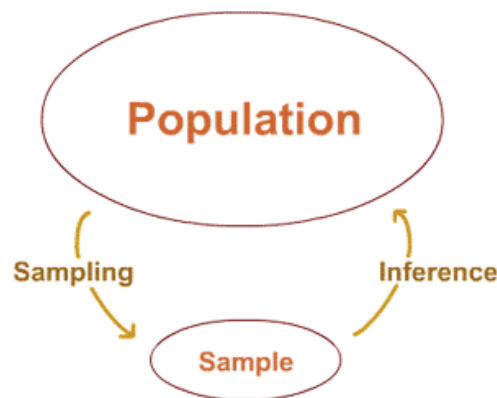


Fig 5.1.4 Population, Sample and sampling

Sampling in this case is the process of selecting individual animals from a population of animals. There are different methods to do sampling and one needs to appropriately follow steps of such methods for getting correct inference of the population.

*Class assignment:*

Refer learning under unit 3.1.2 on data collection, do you remember the statement “there is always a definite or given procedure to collect data and same is needed to accurately analyze data into information”. Can you now relate the current learning to the said statement?

### 5.1.5 Outbreak of disease, morbidity and mortality

Outbreak of disease is defined as occurrence of more cases of a disease than expected in a given area among a specific group of animal population over a particular period of time.

An animal health worker / veterinary assistant while assisting government agencies, often come across terms like morbidity, mortality etc. which are normally used to express outbreak.

Morbidity is a term used to describe how often a disease occurs in a specific area. The morbidity rate ( $\text{Number of incidence of disease} / \text{total population}$ ) is the frequency with which a disease appears in a population.

Mortality is the state of being subject to death. Mortality rate ( $\text{Number of death} / \text{population}$ ), or death rate, is a measure of the number of deaths (in general, or due to a specific cause) in a particular population.

Case Fatality Rate (CFR) which is ( $\text{Death from a specific disease} / \text{cases of that disease}$ ) is the measure of severity of a disease.

### 5.1.6 Livestock value chain

The livestock value chain can be defined as the full range of activities involving different people that are required to bring a product (e.g. live animal, meat, milk, egg, day old chick, feed, medicine, leather, fiber, manure) to final consumers passing through the different phases of production, processing and delivery.

Value chain activities are often related to the term 'Farm to Fork'. This means a range of activities starting from cultivation of various ingredients of animal feed to consuming various processed livestock products.



The term 'value' is used as at every stage value is added to a product. A value can be added by the following means:

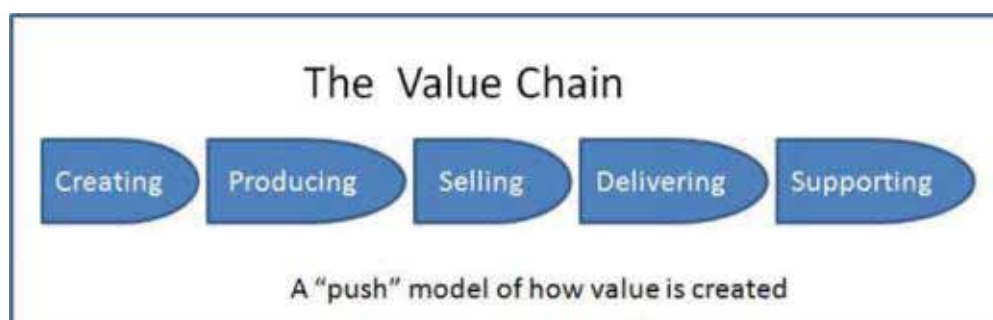


Fig 5.1.6 The Value Chain

An animal health worker / veterinary assistant should understand and appreciate the following:

1. There are different types of people and activities in livestock business. All of these activities add value and are therefore essential for growth of business.
2. In livestock business there is always movement of live animals / products and farm inputs (such as feed, medicine etc.)
3. There are a number of support services e.g. veterinary care, training, banking etc. which are essential for growth of livestock business.



*Fig 5.1.6 Different people and activity (other than farming) in poultry business (Photo Credit: Vet Helpline India Pvt Ltd)*

The activities, behavior and relationships of people in the livestock value chain can influence the occurrence and spread of diseases. Animal and product movement is one of the most important causes of spread of disease.

An animal health worker / veterinary assistant, often needs to help government agencies in recording animal movement routes (including cross border movement) and risky practices within value chain that can result into disease outbreak in animals or cause harm to humans. Information pertaining to animal movement route is important as farms on such routes are vulnerable to disease incidence. Government agencies often conduct surveillance activities on sampled transported animals to understand health status of animals being transported.

An example of unhygienic and high density animal transport that help in disease spread is shown in following figure:



*Fig 5.1.6 Unhygienic and high density transport of live birds (Photo credit: Vet helpline India Pvt Ltd)*

The following is an example of open meat retailing which can lead to foodborne diseases in human.



Fig 5.1.6 Open retailing of meat ( Credit: Dr Ram Deka )

## Exercise



1. Prepare a chart showing biosecurity measures to be taken in the Small Scale and Backyard Poultry farm.

Answer: -----

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2. Explain the Livestock value chain.

Answer: -----

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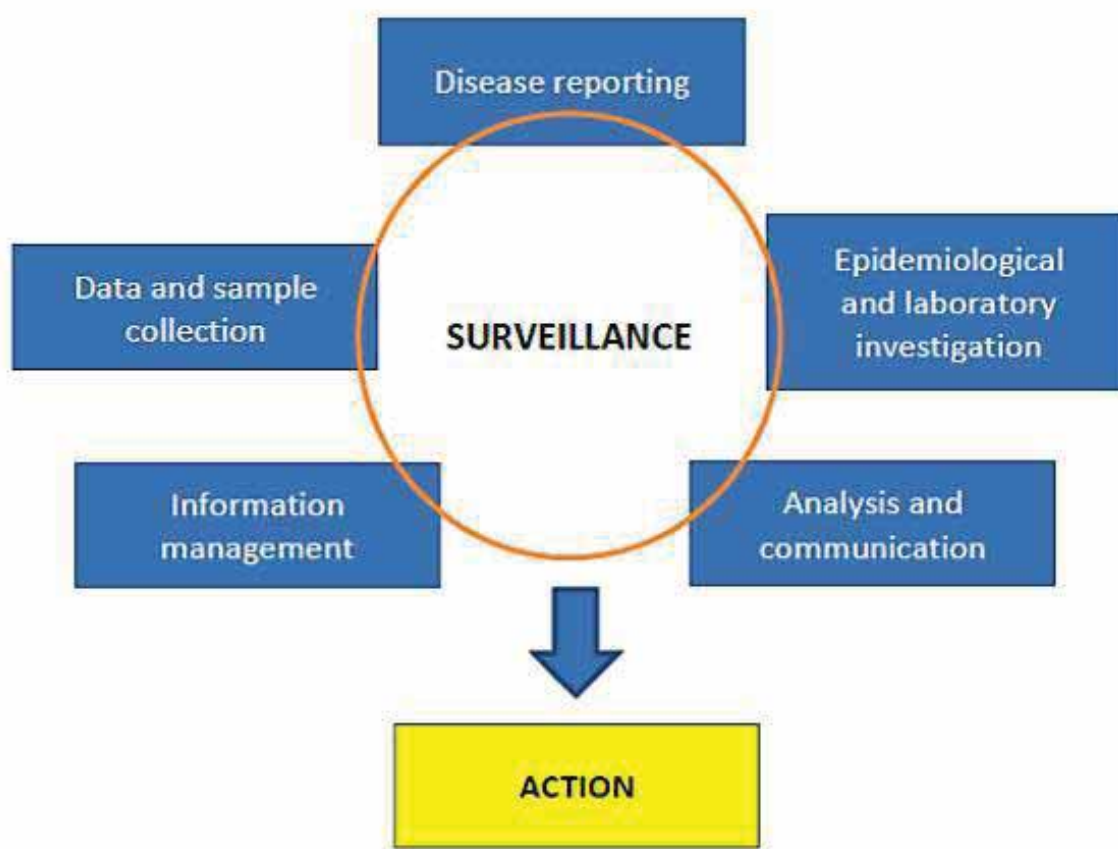


Fig 5.2.1 Components of Surveillance System (Source: OIE)

Animal Health workers / veterinary assistants play an important role in functional areas such as identification (i.e. Data and sample collection), reporting and feedback to the community.

Monitoring normally refers to the continuous observation and systematic studies of a specific disease in particular or similar populations of animals. Monitoring is a more specific activity that will follow as part of an early reaction should surveillance activities indicate introduction of disease.

Monitoring of a particular disease involves the isolation, identification and characterization of the causative agents and their strains involved in the disease incidences. It is necessary to assess the effect of the available health practices like use of vaccines, diagnostics and therapeutics on the management of such disease causing agents.

Following the confirmation of an outbreak of disease, veterinary authorities establish control areas around the affected premises. The extent of these areas depends on a number of factors and is decided based on available scientific knowledge of the disease.

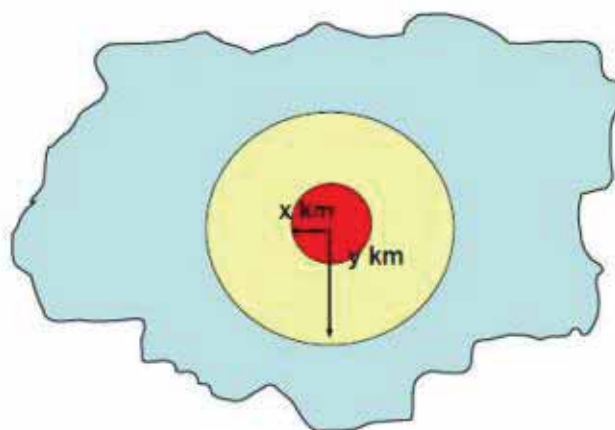


Fig 5.2.1 Illustration of movement control (Source: OIE)

The measures imposed in these control areas will often include movement restrictions, intensified surveillance and specific measures applied to affected premises. Disease control measures such as restriction of movement, culling of animals etc. usually have a significant economic impact. Appropriate communication on the necessity of a particular action and compensation for loss is required for public cooperation and to support the livelihood of affected farmers.

In the event of the above measures by government authority, animal health workers / veterinary assistants need to assist field veterinarians in implementing directives and in seeking cooperation of public in general and affected farmers in particular.

## Exercise



1. What is Animal disease surveillance?

Answer: -----

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## UNIT5.3: Livestock markets

### Unit Objectives



At the end of this unit, you will be able to:

- Understand importance of livestock markets in the context of disease control.

### 5.3.1 Livestock markets



*Fig 5.3.1 A glance of livestock market in West Bengal (India) Credit: Vet Helpline India Pvt Ltd*

Exclusive Livestock markets and other rural markets slaughtering and selling raw meat are categorized as high risk areas for spread of diseases. Animal health workers should keep details of such markets, update government record on markets and educate farmers of nearby areas of such markets to mandatorily take precautions against spread of diseases.

In many places, Animal Health Workers are appointed by market committees for veterinary services under the supervision of visiting veterinarians. The primary task for an animal health worker in livestock market is to observe animals for symptoms of diseases and to provide first aid as or when

required. He or she also needs to verify health / vaccination related documents of animals meant for trade.

There are standard government biosecurity guidelines for livestock markets. Some of this include:

1. Markets should be located away from residential areas. Weekly markets are better than daily markets as there is ample opportunity for cleaning and disinfection on any non-market day.
2. There should be separate entry and exit points for vehicles.
3. There should be separate designated (marked) areas for animals coming from different locations and animals of different species and age group.
4. In areas where there are concrete facilities, all surfaces should be non-porous and/or can be easily cleaned and disinfected.
5. There should be appropriate facility and man-power for easy observation of disease symptoms in animals entering the market.
6. There should be isolation / holding areas for apparently diseased animals.
7. Wet market area (Area for sale of Chicken / Duck etc.) should be properly designated. Poultry should be kept off the ground, either in cages or on raised non-porous matting, to reduce faecal contamination of poultry and the market.
8. There should be adequate facility for clean water supply to animals / birds.
9. There should be facility for proper waste disposal. Dead animals (In the event of death of animals within market premises) should be removed instantly and disposed appropriately.
10. Wild animals / birds should not be sold or kept in market areas.

Some example of practices in rural markets that can help in spread of disease:



*Fig 5.3.1 Unhygienic retailing of chicken in rural market (Photo credit: Vet Helpline India Pvt Ltd)*



Fig 5.3.1 Mixing of different type of birds in rural markets

## Exercise



1. Mention the Government biosecurity guidelines for livestock market.

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Notes



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## UNIT 5.4: Cleaning and disinfection of premises

### Unit Objectives

At the end of this unit, you will be able to:

- Understand the various aspects of cleaning and disinfection.

### 5.4.1 Cleaning and disinfection of premises

Animal Health Worker / veterinary assistants often need to supervise cleaning and disinfection of premises.

An important point to remember is that disinfectants will not work if the surface to be disinfected is not clean before applying the disinfectant! It is almost impossible to disinfect dirt! In other words, cleaning and disinfection are two entirely separate procedures. Any premises must be cleaned first and only after that it should be disinfected.

The cleaning procedure may involve two steps, a dry cleaning followed by a wet cleaning. The process of dry cleaning removes the organic material before the wet cleaning occurs. With the dry cleaning residual dirt, debris, stains, and organic matter, which might neutralize the disinfectant, must be removed first. Bedding, feed, and manure and any carcasses must be removed. Vermin such as rodents, insects, or any other animal needs to be trapped and removed from the premises / facility. The facility should be swept out. The sills and floor should be hand scraped if necessary to remove any caked-on manure, food, or debris. Scrape, scrub, and clean all permanently attached equipment such as waterers, feeders, etc. Removable equipment or anything not attached should be taken outside to allow thorough cleaning and subsequent disinfection.

Wet cleaning involves the use of water and usually a soap or detergent. Soaps and detergents are good cleaning agents. They help penetrate and break up stubborn materials and are mildly germicidal, but they are not suitable for use as disinfectants. The soap or detergent used must be compatible with the disinfectant that will be used in the subsequent disinfection process.

There are four basic steps to the wet cleaning process: soaking, washing, rinsing, and drying. With a wet cleaning allow a soaking time to loosen debris so it can easily be removed with a brush or sprayer. Steam and high-pressure washers are very useful for cleaning porous surfaces during wet cleaning. Hot water of at least 200°F should be used for wet cleaning. Hot water is far more effective than cold water at killing bacteria. Hot water can also be used in pressure sprayers. A detergent may be added to the sprayer to increase its effectiveness. All spray should be applied at a minimum of 200 psi (pounds per square inch) for good penetration. However, this amount of pressure could blow holes in aging materials or a thin cover. Care should be taken not to get the spray into electrical motors. A systematic approach to spraying should be used, such as starting at

the back of the facility and working toward the front, spraying the ceiling first, then the walls, and finally the floor. A thorough rinsing with clean water afterwards removes the detergent and any lingering organic debris and pathogenic organisms that could interfere with the effectiveness of the disinfectant to be used. Rinsing will also decrease the possibility of harm to the animals by accidental absorption of any residual detergent or soap.

The final step of cleaning is letting the wet areas dry quickly and thoroughly. If the facility is not dried properly the excess moisture will result in the multiplication of bacteria to even higher levels than before the cleaning! Thus, improper cleaning can do more harm than good. A proper cleaning should remove more than 90% of the disease causing organisms (pathogens). Once the facility has been properly cleaned and dried thoroughly, then the disinfection procedure can begin.

### 5.4.2 Disinfection

Disinfectants are chemical agents that kill disease causing agents on contact. Disinfection is the destruction of all vegetative forms of microorganisms, but the spores may not be destroyed. There are some basic principles to consider for disinfection. An important point to remember is “hard” water can neutralize the activity of some disinfectants. Also, some disinfectant solutions may only be active for a few days after mixing or preparing. Failure to make a fresh solution of disinfectant after it has been prepared longer than a few days, or after it has become visibly contaminated by organic material like manure, may result in using a product that will no longer be effective. Even worse, it may generate a false sense of security to the disinfection process. Sufficient concentration and contact time may overcome some of these problems with certain classes of disinfectants, but often increasing the concentration or contact time makes use of the product impractical, expensive, caustic, or dangerous to the users or to the animals.

Disinfectants also vary considerably in their activity against the assorted bacteria, viruses, fungi, and protozoa. The product label should be checked for the expiration date. Use of an expired disinfectant may not ensure effectiveness of the disinfection procedure. Many widely used disinfectants are not active against bacterial spores, the environmentally resilient life form of the bacteria that causes tetanus, blackleg, botulism, and anthrax.

It is important to select a disinfectant that will be active against a wide spectrum of pathogenic organisms under the conditions in which it will generally be used. These conditions include hard water, contamination with organic debris, and the potential for toxicity or damage to environmental surfaces, skin, and clothing. It is also important to keep solutions clean and freshly made as per the manufacturer’s directions. All disinfectants, whether they are sprays, foams, aerosols or fumigants, work best at temperatures above 65°F. Temperatures for chlorine- and iodine-based disinfectants should not exceed 110°F. Disinfectants must have sufficient contact time with the surfaces to which they are applied in order to allow them to kill the pathogens concerned. Few disinfectants kill instantaneously. The amount of contact time needed will vary with the product used and the pathogen. A quick splash of a dirty boot into a footbath will not accomplish anything except to give a false sense of security. Usually 20-30 minutes is a sufficient contact time for most disinfectants.

An important point to remember is that disinfectants are not to be applied to animals directly, unless labeled for such use, and the label of the product must be followed closely to make sure there are no warnings against using them around feeders and in animal quarters. A general recommendation is to thoroughly rinse both the cleaning agents and the disinfectants off and dry the surfaces after the appropriate amount of contact time with the disinfectant if animals will have contact with the disinfected surfaces.

Rotating low pH with high pH compatible disinfectants have proved to be more effective than continuous use of the same disinfectant to reduce the possibility of microbial resistance. Microbes can acquire resistance to disinfectants, just as they can to antibiotics. Label directions should be strictly followed and different classes of disinfectants should not be mixed. Adverse, even deadly, chemical reactions may occur.

On most farms, disinfectants will be used in footbaths, for disinfecting equipment, and to disinfect livestock and poultry premises. The disinfection should occur as soon as possible after the cleaning procedures. The disinfectant needs to be applied to all cleaned surfaces and allowed to dry completely. It is optional but recommended to reapply the disinfectant and allow it to dry a second time. Usually one gallon of diluted disinfectant is ordinarily applied to approximately 100-150 square feet of surface area.

## Exercise



1. Write a short note on cleaning and disinfection of premises.

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## UNIT5.5: Culling and disposal of animals

### Unit Objectives

At the end of this unit, you will be able to:

- Learn methods of culling and disposal of dead animals / birds.

### 5.5.1 Culling

Animal health workers / veterinary assistants may require to joining disease control teams engaged in culling (killing) operations. This is however, very rare. Large scale culling operations are mostly done in case of poultry only to prevent spread of disease. The action plan of government of India for control of avian influenza suggests culling of birds by quick twisting of the neck. Animal health workers / veterinary assistants should not attempt to perform culling without veterinarians' supervision.

### 5.5.2 Disposal of carcass

The supervising veterinarian may decide to conduct postmortem to ascertain the cause of death. No postmortem should be attempted when death is suspected due to Anthrax. Disposal of animal carcass by burial is suggested when death is due to infectious disease.

1. Bury any single carcass 6 feet deep and more than 300 feet away from water body, water course, well or spring (if any). The site should be well drained.
2. Lay a 24-inch bed of absorbent organic material (Wood chips)
3. After the carcass is in the grave its skin should be slashed to discourage grave-diggers to exhume the carcass later for its skin.
4. In order to make it unpalatable to scavenging animals, it may be drenched with kerosene, crude phenol or a comparable odorous and bad tasting substance.
5. Cover the carcass with dry high carbon material such as old silage, straws etc.
6. Generously sprinkle lime powder before and after laying the carcass, this helps in decomposition.
7. Ensure that the base is wide enough to allow a 2-foot clearance around the carcass.

The carcass should be carried to the burial place in a trolley and never by dragging it over the ground.

In case of large scale death / culling of poultry, government guideline suggests the following method to be adopted for disposal. The disposal should be done under the supervision of a veterinarian.

The dead birds should be buried in deep pits. Same should be covered with slaked lime followed by at least 40 cm layer of soil. More layers of lime and soil can be applied to level the pit. A pit of 2x2x2 meters will accommodate around 1800 birds. Pits must be deep enough to prevent access to rodents or dogs etc. The burial ground should be suitably marked and is not opened for at least one year. One may need to top it up with earth and lime if it sinks over time. The burial site should be away from the habitat and water logged areas/ ponds/ rivers etc.

The land for pit should be selected at a higher level, to avoid accumulation of water during rainy season. Pits should be located away from river/ lake side and residential areas. No crop should be grown further for at least one year on the pit site.

#### **Disposal by burning:**

Once the site for burning having been decided upon, the trench should be dug. The trench should be at least 0.5m deep, shallower towards the ends, and comparing in width and length to the carcass size. General direction of the trench should be that of the prevailing wind direction. The trench is first fitted with wood, some iron bars placed across it and the carcass placed thereon. By firing the wood, the carcass will be completely consumed and with it all infections material.

In some towns and cities, municipalities / companies maintain carcass utilization or rendering plants for industrial utilization of animal's carcasses. In these plants skins are removed with due regard for the dangers of disease dissemination. After removal the skins are usually disinfected by immersion in a disinfecting solution and the remainder of the carcass, fried out for its fat, the latter being used in manufacture of soap etc.

### **Exercise**



1. What is culling? How do you dispose the culled animal?

Answer: -----

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Notes



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## UNIT 5.6: Animal disease reporting

### Unit Objectives

**At the end of this unit, you will be able to:**

- Learn suggested procedure for animal disease reporting

### 5.6.1 Animal disease reporting

Prompt reporting of any disease incidence is essential for undertaking immediate control measures to prevent further spread of the disease. It also helps in achieving disease free status of the country and increase trade thereof. Government of India is trying to greatly improve animal disease reporting through information technology based National Animal Disease Reporting System (NADRS). In many places animal health workers are being provided with mobile phones with disease reporting related designed applications. Known mobile applications like WhatsApp can also be used to send photos and videos of symptoms as observed in diseased animals.

Under unit 3.7 we have discussed about notifiable diseases. An animal health worker should acquaint himself or herself with the name and common symptoms of such diseases as prevalent in his / her area.

A general data sheet for reporting a disease consists of the following:

Name of the village:

Name of the owner (s) of affected animals:

Address (s):

Exact geographical location(s) of the disease incidence:

Husbandry system: (Backyard / Organized):

Total population of livestock in the village:

Number of animals affected (Morbidity) species wise:

Description of animal(s) having the incidence of disease (Species, breed, age, sex):

Date of outbreak:

Date of first occurrence of disease:

Mortality day wise from the date of first occurrence:

Symptoms observed:

Vaccination status (During last 6 months)

Treatment adopted (if any):

Whether information given to any authority:

Details of any recent movement of animals to the village:

Nearest livestock market:

Nearest water body

Any association with Interstate / International border:

Any other information e.g. observed disease in wild animals, abnormal insect activity etc.

## Exercise



1. Write a short note on Animal Disease reporting.

Answer: -----

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## Notes



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## UNIT5.7:Leadership for local resource mobilization

### Unit Objectives

At the end of this unit, you will be able to:

- Understand the importance and ensure public participation in disease control programs.
- Learn the ways to ensure local resource mobilization.

### 5.7.1 Leadership for local resource mobilization

A resource can be a person, asset, material, or capital which can be used to accomplish a goal. Resource for state or national animal disease control programs primarily comes from government authorities as prevention and control of animal disease is a public good (for the benefit or well-being of the public). However, government alone cannot do this without the help of private people or communities and local non-government institutions. Skills and abilities of people within the community in general and farmers in particular is very important. The activities associated with disease control e.g. Surveillance, Bio-security implementation often requires use of private assets, material and financial support of local people.

An animal health worker / veterinary assistant needs to continuously engage with local community organizations, NGOs to mobilize required private resources.



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Answer: -----

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**ASCI**  
Agriculture Skill Council of India

## 6. Assisting in veterinary extension services

Unit 6.1 – Understanding extension services

Unit 6.2 – Understanding production cycle of farm animals

Unit 6.3 – Basic principle of animal housing

Unit 6.4 – Livestock feeding

Unit 6.5 – Body condition scoring

Unit 6.6 – Selecting animals

Unit 6.7 – Hygienic milking and livestock product handling

Unit 6.8 – Using communication devices



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Promote approved technologies and best practices in livestock farming and handling of animal products.
2. Assist livestock farmers on quality farm input selection and procurement.
3. Assist in implementation of various extension related activities and keeping record of same.
4. Use mobile and other technologies for extension / client education.

## UNIT6.1: Understanding extension services

### Unit Objectives

**At the end of this unit, you will be able to:**

- Learn some basic concepts needed to understand and implement extension programs.

### 6.1.1 KASA

According to Paul Leagans, an extension program is effective when it results in changes in all the following behavioral components of an individual (farmer):

**Knowledge:** What an individual knows?

**Attitude:** What he / she thinks?

**Skills (Both Physical and Mental):** What he or she can do?

**Action:** What he actually does?

These are in short regarded as KASA changes.

It is important for you to understand the key message of any extension initiative in your community more particularly the KASA changes expected from farmers.

For example, if the key message of an extension initiative is to promote fodder production. You need to:

- Provide the farmer knowledge about why cultivation of fodder is important in dairy farming along with detail knowledge of various fodder varieties or technologies (e.g. Hydroponics) that are locally available, yield and constraints as experienced in local conditions etc.
- You need to highlight the beneficial effect of fodder cultivation in such a way that the farmer starts thinking positively about it. You can do this by referring names of successful farmers cultivating fodder / using the technology or showing the calculation of economic gain in terms of milk production or reduction in cost of feeding of concentrate ration.
- Train the farmer or his family how to cultivate so that they can do it on their own. You can invite the farmer for an 'on field' demonstration organized by nearby *Krishi Vikash Kendra*.
- Link the farmer to input supplier selling fodder seeds or one who markets green fodder ensuring that he / she actually does the cultivation.

Sometimes people may have the Knowledge, Attitude and Skills – but lack resources to undertake the practice change or actions. You can help people to mobilize required resources.

### 6.1.2 Knowing what extension involves.

Ensminger (1965), highlighted in details as to what extension involves. Some of the examples are as follows.

Extension involves:

- Changing attitudes, knowledge and skills of the people.
- Teaching people what to want (i.e. Converting unfelt needs into felt needs) as well as how to work out ways of satisfying these wants, and inspiring them to achieve their desires.
- Helping people to help themselves
- Teaching through “Learning by doing” and “Seeing is believing”
- Development of individuals, their leaders, their society and their world as a whole.
- Working in harmony with nature and the culture of the people.
- Bringing scientific information to village people and also taking the problems of village people to the scientific institutes for solution.

An extension worker should essentially believe that rural people are intelligent, are interested in obtaining new information and at the same time have a keen desire to utilize this information for their individual and social welfare.

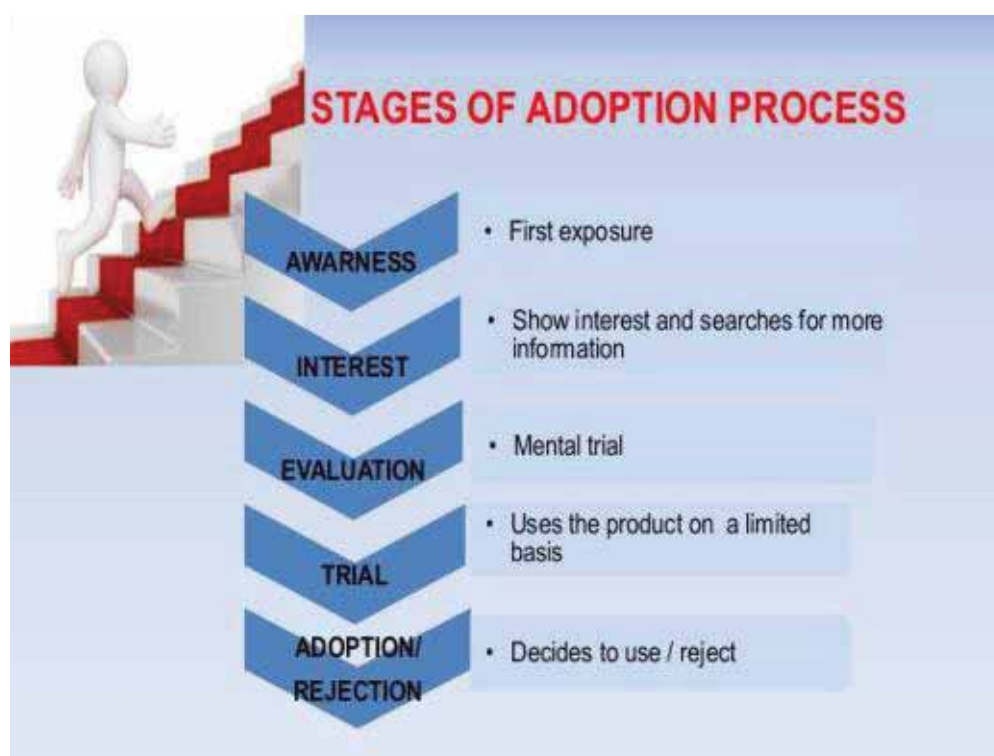
To meet the national goal of achieving food security, improving livelihood, poverty alleviation and sustainable use of resources an extension program normally focuses on the following four objectives:

- Technology Transfer (with farmer participation and feedback)
- Human capital development (mostly focusing on skill development)
- Social capital development (getting farmers organized into producer groups or other types of farm organizations to carry out specific activities)
- Education for sustainable use of resources.

### 6.1.3 Technology adoption and extension methods

The adoption process of a technology involves stages like awareness, interest, evaluation, trial and finally adoption (refer picture)

On-Farm Trial (OFT) aims at testing a new technology or an idea in farmers’ fields, under farmers’ conditions and management, by using farmers own practices as control. An animal health worker / veterinary assistant often need to offer his or her services for such trial conducted by *Krishi Vigyan Kendras (KVKs)*



The following diagram indicates use of various extension methods for use at different stages of adoption.

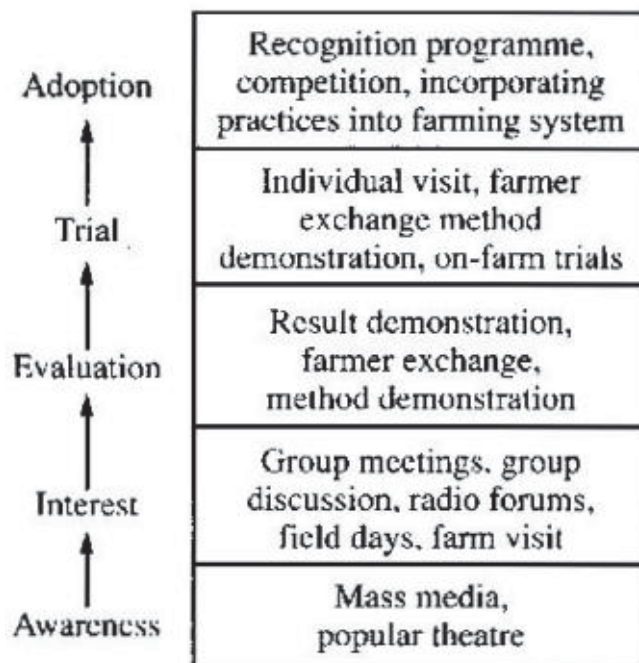


Fig 6.1.3 Extension methods vis a vis stages of technology adoption (Source: FAO)

There cannot be any technology which is devoid of negative consequences. It is necessary for an animal health worker or veterinary assistant to provide the information on both positive and negative consequences of the technology to the livestock farmers which enable them to take appropriate decisions. However, this is possible if adequate information on the advantages and disadvantages of a particular technology in a particular social system are gathered through on farm trials. It is important that one should resist from the tendencies of painting a rosy picture of a technology to avoid future mistrust. One should always take support of the local leaders and progressive livestock owners before popularizing any new technology within the community.

### 6.1.4 Participatory Rural Appraisal

Participatory Rural Appraisal (PRA) recently renamed as Participatory Learning for Action (PLA), is a methodological approach that is used to enable farmers to analyze their own situation and to develop a common perspective on natural resource management and agriculture / animal husbandry at village level.

PRA is an assessment and learning process that empowers farmers to create the information base they need for participatory planning and action. Outsiders contribute facilitation skills, external information and opinions. Many different tools have been developed for use in PRA.

Many NGOs / agencies who regularly use PRA tools involve animal health workers / veterinary assistant at the community level.

An animal health worker / veterinary assistant should make all endeavors to participate in PRA programs conducted by NGOs and other agencies.

## 6.1.5 Leadership

In every society there are some people within groups who make decisions on behalf of others, who can influence others in the group. They are commonly designated as leaders. A leader is a person who effectively influences a group to co-operate in setting and achieving goals. Leadership is an activity in which effort is made to influence people to co-operate in achieving a goal. In other words, leadership is the ability to get people work willingly by influence or by setting example. It is a social process, which initiates action for and with followers.

The success of a leader depends upon his ability to work with people and to get things done through people. This involves the use of effective communication skills. To be effective, the leader must have the ability to convey meanings to his people.

The four factors which influence a leader's efforts are:

1. Drive: The physical and mental effort expended by the leader. Individuals who have a great deal of drive were found to have more influence with their peers and work group.
2. Dependability: The reliance people can place in the leader's word. A highly dependable leader is trusted by his subordinates.
3. Competence: The ability of the leader to get a job done effectively and efficiently.
4. Credibility: The degree to which a leader is believable. It is an important asset which is directly affected by the perception people have of the individual's honesty, discretion and ability.

While working as an extension worker, an animal health worker / veterinary assistant must collaborate with local leaders or leaders within the community. The following characteristics are examples of the qualities to look for in a local leader.

- Initiative to take the lead and infuse confidence in others.
- Intellect to understand issues and identify problems.
- Interest and energy to work unselfishly with his / her followers.
- Influence over others and the ability to persuade and teach.
- Integrity and sense of responsibility.
- Experience in farming and modern practices.
- Educated and literate.
- Reliable and regular participant in development programmes.
- Innovative and willing to try out new ideas.
- Trusted and liked by his fellow livestock owners.

### 6.1.6 Working with farmer groups

The extension agent should inspire confidence and trust in the farmers he serves, set them an example and take the lead in initiating activities. The Extension approach in recent years have changed from individual to group mainly because the decision making is shifted from individual to groups of producers. India is known for its cooperative and self-help group movement in recent years. A number of successful producer companies are also emerging.

Success of farmer groups are closely related to cooperation from all the group members. An animal health worker / veterinary field assistant while working as an extension agent essentially need to promote and guide group of producers so as to help them grow with livestock and husbandry related economic activities. They also need to motivate each member of producer groups to pro-actively take part in group activities taking the required leadership (authority, responsibility and accountability) on behalf of the group. The concept of shared leadership or collective leadership is always ideal for groups and it refers to the ways in which authority, responsibility and accountability are more broadly distributed within the group to create opportunities for participation in leadership of the group by more or all of its members.

### 6.1.7 Government extension delivery system

Ministry of Agriculture, Government of India sponsored scheme “Support to State Extension Programmes for Extension Reforms” aims at making extension system farmer driven and farmer accountable by disseminating technology to farmers through new institutional arrangements named as Agricultural Technology Management Agency (ATMA).

ATMA is an autonomous institution set up at district level to ensure delivery of extension services to farmers. At the block level, ATMA Cell consist of Block Technology Team (BTT) (a team comprising officers of agriculture and other allied departments within the block) and “Block Farmers Advisory Committee (BFAC) (a group exclusively consisting of selected farmers of the block). BTT and BFAC prepare the Block Action Plan (BAP) and provide necessary extension support within the Block in its execution.

At the village level ATMA works with Farmer Friends (FF), Input dealers, non-government extension workers. Various producer groups serve as a nodal point for information and technology

dissemination among its members. ATMA also supports 'Farm Schools' which serves as a mechanism for farmer-to-farmer extension at every Block.

Farmer Friends (FF) supported under ATMA is an experienced, practicing and achiever farmer who leads by examples. Besides nominal financial assistance, they are provided with special opportunity for upgradation of skills through trainings, study tours and visits to state agricultural universities and other institutes.

ATMA supported Farm schools are conducted by select achiever farmers at their farms itself for the benefit of fellow farmers. "Teachers" in the Farm Schools could be progressive farmers, extension functionaries or experts belonging to Government or Non-Government Sector.

Another initiative of Government of India is the scheme: *Deen Dayal Upadhyaya Antyodaya Yojana* (DAY) or National Rural Livelihood Mission (NRLM, *Ajeevika*). The scheme has the provision for engagement of Community Resource Person (CRP) at village level who are entrusted with the task of veterinary service delivery and extension assistance to self-help farmer groups under the guidance of veterinarians.

Trained animal health workers / veterinary assistants are always encouraged to support / join activities under above government schemes.

*Note: Your training provider may introduce you to Farmer Field School (FFS) program implemented by any local NGO or government agency. An FFS is a capacity building method based on adult education principles using groups of farmers. It is best described as a 'school without walls', where farmers learn through observation and experimentation in their own fields. This allows them to improve their management skills and become knowledge experts on their own farms.*

*(Livestock Farmer Field Schools – Guidelines for Facilitation and Technical Manual published by International Livestock Research Institute (ILRI) can be downloaded by NGOs from internet)*

## Exercise



1. How one should promote the practice of ensuring 24-hour clean water availability for dairy animal? (Refer KASA)

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2. Discuss various extension methods. Make a comparison between result and method demonstration. (E.g. The purpose of result demonstration is to show locally the worth or value of a recommended practice. Whereas for method demonstration, the purpose is to teach how to do a job involving skill)

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3. Discuss in group various initiative in your district / village / community for social capital development.

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Notes



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## UNIT6.2: Understanding production cycle of farm animals

### Unit Objectives

At the end of this unit, you will be able to:

- Understand the basic production cycle of farm animals.

### 6.2.1 Production cycle of farm animals

Understanding of basic production cycle of farm animals is essential for providing animal health and management related services. Refer the following diagrams to understand the production cycle of dairy cow.



#### BREEDING & CALVING SCHEDULE for DAIRY COWS

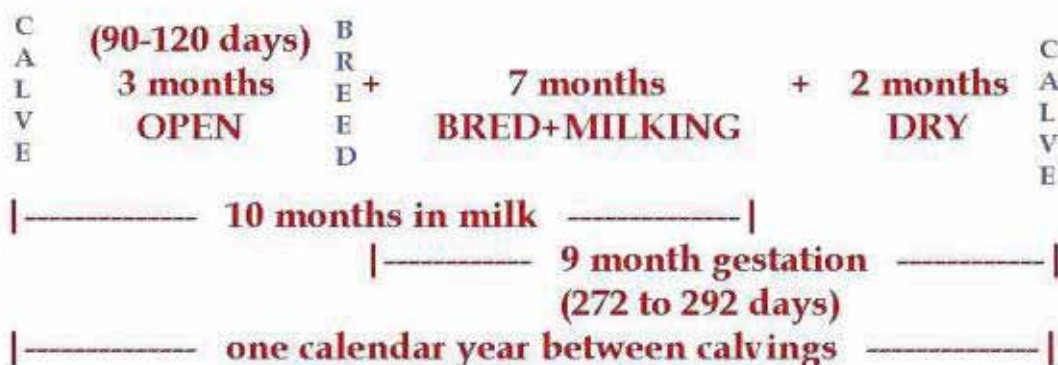


Fig 6.2.1 Production cycle of farm animals

Notes



A large rectangular area enclosed by a thin orange border, containing 30 horizontal lines for writing notes.

## UNIT6.3: Basic principles of animal housing

### Unit Objectives

At the end of this unit, you will be able to:

- Understand key principles of livestock housing so as to interpret various best practices.

### 6.3.1 Basic environment

The exact design of any livestock housing facility will depend on its intended use, the local environmental conditions, the amount of available finance, and a range of other different factors. However, certain basic requirements are common to all types of housing and are necessary to preserve the comfort and well-being of the animal.

All animals are entitled to the Five Freedoms wherever they are housed. Basic requirements such as an agreeable physical environment are necessary, and the animal should be well cared for.

The Five Freedoms are a set of five basic rules concerning the welfare of animals. They apply to the housing of both large and small animals. They are as follows:

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

Wherever any animals is housed, they are entitled by law to these rights.

An agreeable physical environment should be:

- Pleasant
- Dry
- Clean
- Odour free
- Correctly lit (sufficiently intense light to see during the day)
- Safe to prevent accidental injury

Well cared for animals should have at least:

- Regular access to open areas
- Constant clean water supply
- Appropriate feeding
- Companionship

This should all be provided as efficiently as possible.

One of the primary objectives of farm buildings is that they should modify the climate (micro-climate) inside them by reducing the extremes of climatic elements. Amelioration

### 6.3.2 Housing

It is difficult to suggest an ideal housing system which would suit all regions of the country. There are however, two main types of animal housing system viz. Closed housing (conventional barns) and loose housing. Depending on geographical, climatic, economic conditions and traditions we find a number of variations in each type. Loose housing system is suitable for most part of India except cold areas (temperate) and high rainfall zones.



*Fig 6.3.2 Loose housing system, Dairy farm of Mr Kumkule, Wajegoan, Maharashtra*

**Loose housing system for tropical climate: an old wisdom revisited** (Source: Prof. Abdul Samad, Bombay Veterinary College)

*“When we see the old animal housing system in India, it is evident that the farmers were following paddock system whereas the animals were taken for grazing whole day wherein they were free to move around. They were tied only during the night that too on earthen floor and not the concrete. We have developed concept of new housing system that is very cost-effective, animal and farmer-friendly and has been found to be useful for small-holding as well as intensive dairy farming system. The system consists of a wooden / wired compound erected around the existing animal shed. The feeding and water facilities are provided either inside the shed or outside, in which case this area is covered to provide protection from rains and intense heat. The animals are let free all the time. The floor is prepared by providing proper drainage and preferably raised from the adjoining area and slope is provided. During last six months the farmers in two milk unions were trained in preparing such animal houses. In a period of six months more than 300 farmers have shifted to the new system. Their investment in the new housing @ 50-100 square feet per animal, ranges from Rs.200 – 500 per animal. The new system has resulted in several benefits, such as saving of around 200 L water per day, reduced feed intake @ 10-15%, increased production @ 15-20% and work hours of around 3-4 hours per day. Since the manure turns dry, the removal frequency in most of these farms is 1-3 months and handling is convenient. In most of these farms the incidence of mastitis, metritis, lameness, feet lesions/ wounds, etc., have come down drastically. In various Milk Unions the new housing system has assumed proportion of a mass movement around which productivity enhancement programs are being introduced”*



Fig 6.3.2 A layer farm house in Assam (India) prepared using traditionally available bamboo

**Extension advisory  
on  
Housing for backyard poultry**

Housing protects the backyard poultry from predators and other losses. Backyard poultry rearing requires only minimal housing facility; the coop should have a minimum of four square feet of space per hen, and one perch and one nest box for every four or five hens. Spread a 6-inch layer of shavings or sawdust on the floor to absorb droppings and give the birds a place to take a dust bath. Chickens tolerate temperature extremes but will suffer in cold winter drafts or stifling summer heat. Make sure the coop is free of drafts during the winter and well ventilated in the summer.

Protect your chickens from predators by keeping them penned within good, sturdy fencing and closing the coop door each evening after your flock goes to roost.

This can be built by farmers using locally available materials. Instances of farmers rearing larger numbers are not rare. In such case sheds with about 2-2.5 sq. ft per bird will suffice.

***S R Livestock Services***

## Exercise



1. Mention the recommended floor, feeding and watering spaces for various livestock species.

Answer: -----  
-----  
-----

2. How can we ensure good ventilation and appropriate sunlight inside farm buildings?

Answer: -----  
-----  
-----

## Tips

- *The training instructor will make presentation on species wise livestock housing system as prevalent in your area. The presentation should essentially highlight good and bad practices and indicate possible use of local materials.*

## Notes

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## UNIT6.4: Livestock feeding

### Unit Objectives

At the end of this unit, you will be able to:

- Understand key principles of livestock feeding so as to interpret various best practices.

### 6.4.1 Basic principles

There are six classes of nutrients that are essential to every living animal for survival. They are:

1. Water
2. Protein
3. Carbohydrates
4. Fats/Lipids
5. Vitamins
6. Minerals

Scientific feeding involves:

- An understanding of the different nutrients required by livestock for different physiological functions such as maintenance, growth, reproduction, milk production, wool production etc.
- An understanding of the physical and nutrient components of different feed and fodder resources, the nutrients contained in them and how efficiently they are utilized by the animals.
- Formulating balanced rations by combination of different feed and fodder resources to supply the nutrients to livestock for different physiological functions.

Balanced rations for ruminants (Cattle, sheep, Goat) are made up of five basic types of feed. When combined in the right amounts, these feeds can supply all the nutrients needed to keep ruminants healthy and productive. The five types of feed are:

1. **Bulk forages for energy:** They include fresh materials, such as green grass, as well as dry materials, such as hay. They provide most of the energy a ruminant needs and some minerals and will make up most of the ration – they are what fills the animal and stops it feeling hungry. They often grow naturally, such as grass and other plants on roadside reserves or natural pastures, or are the part of the plant left over when crops grown for people are harvested, such as stovers or straws of maize, sorghum wheat or rice
2. **Supplementary forages for energy and protein:** Supplementary forages provide both energy and protein and some minerals. These are fibrous plants, similar to bulk forages, but they are usually especially grown on the farm as feed for animals and contain higher protein

and/or energy levels than bulk forages. Most are legumes and include herbaceous plants, shrubs and trees. They are fed in addition to the bulk forages, usually in smaller amounts. They can be used either to compensate for poor quality bulk forages or they can be used as substitutes for concentrates. The feeding value of different supplementary forages varies.

3. **Concentrates for energy and protein:** These are feeds that supply more highly concentrated nutrients than forages. They contain high levels of protein or energy or both, and also some minerals. They are also low in fibre and easy to digest. They include specially made feeds, such as commercial dairy meals, as well as cereal by-products (wheat germ, maize germ) and other high energy and/or high protein feedstuffs (molasses, soybean meal and brewers' dried grains etc.). Cereal grains such as maize, wheat and barley, if available and economical to feed. Concentrates are expensive and are therefore fed in small amounts in addition to forages; the amounts fed should depend on production.
4. **Mineral supplements:** Although some minerals are naturally present in bulk and supplementary forages and concentrates, dairy cows also need to be regularly fed additional minerals. This is most easily done by regularly offering access to a commercially manufactured mineral supplement.
5. **Vitamins supplements:** Vitamins are normally not a problem with practical ruminant rations: some vitamins are made by the micro-organisms in the rumen and others are naturally present in feeds, such as leafy green forages.
6. **Water:** Water is essential for life. Ideally, animals should have access to clean drinking water at all times.

The science of livestock production divides itself into several different physiological phases. Every animal should be fed so that the nutritive requirements of each physiological phase of production with which it is involved are met.

The physiological phases are:

- Maintenance
- Growth
- Pregnancy (Reproduction)
- Milk, Egg, wool Production & work

### Extension advisory on Supplementary feeding of improved backyard poultry

Backyard poultry is an important tool for alleviation of rural poverty. All state governments across the country including the central government promote backyard poultry farming on a wide scale. Poultry breeders and hatcheries have come out with specific varieties of poultry for Backyard poultry farming. Backyard poultry varieties have been genetically designed for laying as well as improved fleshing. Some of such varieties are *Gramapriya*, *Gramalakshmi*, *Vanaraja*, *Giriraja*, *Kuroiler*, *Kadaknath* etc. While the commercial layer varieties lay anywhere between 300-330 eggs a year improved backyard poultry yields between 160-180 eggs/year and attains a body weight of around 2-2.5 kgs. While the country chicken lay around 50-80 eggs a year on foraging alone these improved varieties of backyard birds require supplementary feeding to achieve their full laying potential of 180-240 eggs/annum and also to attain a body weight of approximate 2-2.5 kgs.

Raising layer hens is an investment in fresh, wholesome eggs. Your hens will perform best if they have room to live and roam nutritious feed, fresh water, and a safe, comfortable coop to nest and roost.

Because hens rarely find enough nutrients on their own for a complete, balanced diet, your choice of feed is important. Select one with the protein, vitamins and minerals they need to meet their unique nutritional requirements. Keep feed and fresh, clean water available at all times. Give your hen's oyster shell or coarse-ground limestone to help maintain their calcium levels and grit to help them digest their food. An occasional treat of scratch grains will satisfy their pecking instincts and keep them busy.

Most hens will spend nine months of the year laying and three months shedding and replacing their feathers. Both activities (laying and molting) require large amounts of protein. Laying nutritious eggs and making new feathers requires plenty of protein all year round. Not only do our hens need the right type of protein but they also need a nutritionally well balanced diet. The ratio of protein to fiber to fat to salt to essential minerals and vitamins needs to be in the correct amounts for optimum health and egg production. All proteins as we know are made up of building blocks called amino acids and different proteins have different amino acids. Chickens can use both vegetable and animal proteins but to function correctly they need specific proteins which contain amino acids like Methionine and Lysine which are essential to a chicken's health.

Many backyard poultry keepers believe that birds can live and lay happily on, rice wheat, bran's, kitchen scraps and a little daily access to free range. This diet is woefully deficient in protein and fat and often too high in carbohydrates and fiber. So if you are feeding out mainly rice, wheat or maize to your birds think again! They are not laying an egg made up of carbohydrates! Eggs are essentially 'protein' wrapped in calcium so a bird needs to consume good quality animal proteins to achieve good egg output.

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## 6.4.2 Common Terms Used in Animal Feeding

Knowledge of the following terms is important to read the label of commercial livestock feed and to understand any document describing feeding standards.

**Nutrient requirement:** Nutrient requirement refers to the minimum amount of nutrients (energy, protein, fat, minerals and vitamins) necessary to meet an animal's real needs for maintenance, growth, reproduction, lactation or work

**Forage:** Forage refers to plants or plant parts other than separated grains fed to or grazed by domestic animals. Forage may be fresh, dry or ensiled.

**Roughage:** Roughage refers to bulky and coarse feed high in fiber but lower in energy than most concentrates. For example, forage, hay, silage and haylage are sometimes called roughage.

**Concentrates:** Concentrates refer to animal feeds that are rich in energy and/or protein but low in fiber, such as corn, soybean meal, oats, wheat, molasses, etc.

**Ration:** Ration refers to the 24-hour feed allowance for an individual animal.

**Nutritive Value (NV):** Nutritive value refers to a feed's protein, mineral and energy composition, availability of energy, and efficiency of energy utilization.

**Ensiled:** Ensiled refers to the plant materials preserved by anaerobic fermentation and typically stored in a bag, bunker, wrapped bale or upright silo.

**Silage:** Silage refers to the feed preserved by an anaerobic fermentation process (e.g., corn silage, haylage, high moisture corn) in which lactic acid and volatile fatty acids (produced by fermentation) lower the pH of the silage. The low pH preserves the silage.

**Monogastric:** Animals having a single compartment or simple stomach system (e.g., swine, horse). Contrast with rumen and ruminants.

**Crude Protein (CP):** The crude protein content of a feed sample represents the total nitrogen (N) in the diet, which includes not only true protein but also non-protein nitrogen (e.g., urea and ammonia in a feed).

**Non Protein Nitrogen (NPN):** It refers to nitrogen in a feed sample that is not in the form of protein but can be used by the microbial population in the rumen or gastrointestinal tract to synthesize amino acids and proteins. Common forms of NPN are urea and ammonia.

**By Pass Protein:** The portion of intake protein that has a slow rate of degradability in the rumen. It is fed so that it may escape digestion in the rumen, reach the lower gastrointestinal (GI) tract essentially intact and be digested directly in the small intestine as it would be in non-ruminants. This can provide a balance of amino acids unaltered by microbial digestion and synthesis. By-pass protein is also known as undegradable intake protein (UIP), rumen undegradable protein (RUP) or escape protein.

**Digestibility:** Digestibility refers to the extent to which a feedstuff is absorbed in the animal body as it passes through an animal's digestive tract. It varies greatly with the type of feedstuff and type of animal concerned.

**Digestible Energy (DE):** Digestible energy provides an indication of the actual amount of energy from a feed that can be available for use by the animal.

**Metabolizable Energy (ME):** Metabolizable energy equals the gross feed energy minus the energy lost in the feces, urine and gaseous product of digestion

**Dry Matter (DM):** Dry matter represents everything contained in a feed sample except water; this includes protein, fiber, fat, minerals, etc. In practice, it is the total weight of feed minus the weight of water in the feed, expressed as a percentage. Dry matter basis indicates the nutrient levels in a feed sample based on its dry matter content (i.e., excluding its water content). As there is considerable variation in the water content of forages, excluding the water or expressing the nutrient levels on a dry matter basis eliminates the dilution effect of the water, thereby providing the essential common basis for direct comparison of the nutrient contents across different forages.

**Total Digestible Nutrients (TDN):** It is a measure of the energy value in a feedstuff.

**Palatability:** Palatability refers to the appeal and acceptability of feedstuff to an animal. Palatability is affected by the feed's odor, texture, moisture, physical form and temperature.

**Ruminal Microbes:** Ruminal microbes include the whole community of microorganisms present in the rumen of ruminant animals. They accomplish the digestion or fermentation of feed. An estimated 150 billion microorganisms per teaspoon are present in the contents of the rumen. This microbial community consists of bacteria, protozoa and fungi.

**Total Mixed Ration (TMR):** A total mixed ration is a homogeneous mixture of mechanically mixed ration ingredients that typically combine roughages (forages) and concentrates such as grains to optimize animal performance.

**pH:** pH is a measure of acidity or alkalinity. Values range from 0 (most acidic) to 14 (most alkaline or basic). A pH value of 7.0 is neutral (neither acidic nor alkaline).

**Toxicity:** Toxicity refers to the extent to which a substance can exert a poisonous effect on animals

**Supplement:** A supplement feed or feed mixture is used to improve the nutritional value of the ration complementing the nutrients in the base feed. A supplement is rich in one or more of protein, energy, vitamins or minerals, and, in combination with the base feeds, produces a more complete feed.

**Micro -minerals:** Micro-minerals, or trace minerals, are present in the animal body tissues in extremely low concentrations. They are nutrients required in small amounts, generally in milligram (mg) or microgram ( $\mu\text{g}$ ) amounts per head per day, but play critically important roles in animal nutrition. There are 10 micro-minerals recognized in animal nutrition: iron (Fe), manganese (Mn), copper (Cu), zinc (Zn), selenium (Se), cobalt (Co), iodine (I), chromium (Cr), molybdenum (Mo) and nickel (Ni).

### 6.4.3 Common Feed ingredients / Fodder variety

Some of the common feed ingredients and fodder variety are shown in following table.

Sl.No.	Material
Roughages	
1	Rice Straws
2	Wheat Straws
3	Jowar Straw
4	Bajra Straw
5	Sugarcane Bagasse
6	Hay
Greens	
7	Maize
8	Lucerne
9	Berseem
10	Hybrid Napier
11	Jowar Green
12	Bajra Green
13	Sugarcane Whole
Concentrates	
14	Cottonseed cake
15	Groundnut cake
16	Sun flower cake
17	Linseed cake
18	Rice bran
19	Wheat Bran
20	Gram chuni
21	Tur Chuni

*Table: 6.4.3 Common Feed ingredients/ Fodder variety*

The use of the above feed ingredients and fodder varieties differ considerably from place to place within India. Bulk of the concentrate feed for ruminants is being produced in large part by home and custom mixers. Industrially manufactured compound cattle feed has proved its value for cross-bred cows and buffaloes. It is advisable to experiment with compound cattle feed. However, one should follow manufacturers' guidelines of gradual replacement and other precautions. Industrially manufactured various brands of compound feed for poultry (Commercial Broilers / Layers) is extensively used across the country.

### 6.4.4 Nutrient requirement and feeding plan

Your training instructor will make presentation on recommended nutrient requirement for various species of farm animals along with feeding plan as suggested for your area. The presentation will also highlight good and bad practices and indicate possible use of locally available unconventional feed ingredients. Following is an example related to feeding Pigs as suggested by National Research Centre on Pig, Rani, Guwahati, Assam.

Nutrients	Starter	Grower	Finisher
Protein %	20.0	18.0	16.0
Energy, ME (kcal/kg)	3360	3170	3170
Calcium, (g/kg)	6.0	6.0	6.0
Phosphorous (g/ kg)	6.0	4.0	5.0

Table 6.4.4 Nutrient requirement of pigs (BIS, 1986)

Ration	Starter (0-15 kg)	Grower (15-35 kg)	Finisher (35-80 kg)
Maize	60.0	64.0	60.0
Wheat bran	6.5	6.5	15.5
Soybean meal	19.0	15.0	10.0
G N Cake	12.0	12.0	12.0
Mineral Mixture	2.0	2.0	2.0
Salt	0.5	0.5	0.5
TOTAL(Kg)	100	100	100
Phytase Enzyme	20g	20g	20g
Probiotics	0.25g	0.25g	0.25g
Crude Protein	20%	18%	16%

Table 6.4.4 Example of balanced ration formulations for pigs

Categories of Pig	Days	Weight (Kg)	Feed requirement Kg / day / Pig	Approx. growth (g / day)
Weaner	56-120 days	0-15 Kg	0.25 -0.75	250-270
Grower	121-180 days	15-35kg	0.75-1.50	450-500
Finisher	180-300 days	35-80 kg	1.50 -2.50	500-550
Lactating Sow	3.0 -4.0 kg of concentrate feed daily, additionally 200g concentrate per piglet.			
Pregnant gilt	2 kg mixed feed per day.			
Breeding boars	3 kg concentrate feed per boar daily up to 18 months			
Mature boars	2.5 kg concentrate feed along with 4-5 kg succulent green fodder.			

Table 6.4.4 Daily feed requirement of different classes of pigs

### Feeding of unconventional feeds to Pigs

Farmers can use following locally available feed resources in order to maintain economic feeding plan.

#### Colocasia (*Kachu*) feeding:

- Boil 3-4 kg of colocasia (Stem and leaves)
- Remove the watery portion in order to reduce oxalic acid content of colocasia.
- Add 500 to 600 g rice polish, 100g either ground nut cake or soybean meal, 10 g mineral mixture (Lactovita gold, Totavita gold etc.), 5 g common salt.
- Mixed properly and give to grower pig

#### Tapioca feeding:

- Remove the peel of tapioca tubers
- Slice it (1.5 to 2 mm thickness)
- Soaked in water over night
- Drain and dry it in sun light till it losses 95-100% of water.
- Grinded tapioca meal can replace maize by 15% without affecting growth and nutrient utilization.

#### Brewer's rice products (*Juguli*) feeding:

- Mixed 2-3 kg of BRP with 250-300 g rice polish, 100-150 g oil cakes (soybean / ground nut), 10 g mineral mixture and 5 g salt.
- It can be fed to a grower pig without affecting the growth and nutrient utilization.
- BRP can replace 25% total concentrate ration in crossbred grower pigs

#### Sugar beet feeding:

- 750g fresh sugar beet and 1200 g standard grower ration can meet the nutritional requirement of grower crossbred pigs with an average growth of 250-300g / day.
- 10% concentrate can be replaced with sugar beet without affecting growth and nutrient utilization.

**Other unconventional feeds fed to pigs are:** Water hyacinth, Azola, cooked Hotel waste, Bakery waste

*From: Feeding of Pig. NRC-Pig Technical Leaflet (Ref. NRC(P)/AN/Leaflet-01)*

## 6.4.5 Fodder Preservation and enrichment

Prolonged preservation of fodder in the form of silage is the key to overcome the increasing constraints in green fodder availability. Silage is fermented, high-moisture stored fodder which can be fed to cud chewing (ruminant) animals such as cattle, sheep and goats.

Nutritive values of poor quality straws can be enriched by processes like addition of chemicals. One such technique is the urea enrichment process. The urea enrichment of straws increases their nitrogen content, palatability and digestibility. Ready to feed enriched crop residue blocks are also available in some places within India.

### 6.4.6 Organoleptic (Physical) testing of feed

Organoleptic (using five senses) testing of feed is a skilled work. An animal health worker / veterinary assistant mastering on this skill can greatly help farmers' / community cooperative in choosing quality feed ingredient / feed for purchase. The following technical bulletin can be referred while practically attempting to physically evaluate feed / feed ingredient.

#### Organoleptic testing of Feed

There are different types of testing methods to check quality of feed. Organoleptic testing or testing based on senses can be done by any skilled person in field condition.

##### Sight

- a) **Color:** The appearance of the ingredient will reveal its quality. Change in the color of materials gives an indication of the maturity of the grain, storage condition and presence of toxins.
- b) **Size:** Size of the grain is good indicator of energy value. Smaller the grain lower will be the ME value, since the seed coat part will be in increased proportion. Hence to evaluate the cereals weight of a fixed number of grains can be used; especially weight of one hundred grains will give a good indication. Higher the weight indicates a higher ME value.
- c) **Homogeneity:** Here we have to look for the uniformity in the material and for the presence of contaminants like other grains, husk etc. Further, in the cakes closer observation will reveal the presence of fibrous material, especially in de-oiled groundnut cake, the cake with hulls which contains nearly 20 to 25% fibre can be visually identified.

**Smell:** Smell is the next best indicator. One can familiarize himself / herself with normal smell of the ingredients. Any change in the smell should be viewed with suspicion. Musty odor indicates the beginning of fungal contamination. To detect rancidity in oil rich feed ingredients this is the best method.

**Taste:** Each ingredient has a different taste, any change in the taste can be detected. Bitterness in the grains, soya, sunflower oil meal and groundnut meal indicates the presence of mycotoxins. The level of salt can be detected by tasting the ingredient and the feed.

**Touch:** Feeling the raw material will indicate the dryness, chilliness indicates high moisture content. Clumps can be found by inserting the hand inside the bag, all clumps need not be due to high moisture content or improper storage, but due to packing fresh warm solvent extracted meal, these clumps will crumble on application of light pressure, but those formed due to excess moisture will be very hard. To evaluate rice polish, place about 25g of rice polish on the palm and close the fingers tightly and then open the fingers the rice polish will become like solid mass if the fibre level is below 12%, if the fibre level is high the mass will disintegrate once the fingers are opened further, pressure will be felt when the hand is closed in high fibre rice polish.

**Sound:** The sound like spilling of the coins when the grains are poured down indicates dryness, and when the grain is bitten the sound will also indicate dryness.

**Physical methods to detect adulteration or contamination:**

The common contaminant or adulterant is husk or sand, to detect husk in the feedstuff winnowing is the best method, a weighed quantity is taken in a tray and allowed to fall when light wind is blowing, will separate the husk from the ingredient and it can be weighed. Sieving can be done to differentiate contaminants based on particle size. To detect for presence of sand a weighed quantity of grain is soaked in water then by sieving with hand the grains can be separated the remaining water if decanted, the settled sand can be weighed and level of contamination can be assessed.

*Excerpts of Technical Bulletin of American Soybean Association*

*Author: Dr D Chandrasekaran, Animal Feed Analytical & Quality Control Laboratory, TANUVAS*

**Exercise**

1. Discuss in group some of the common popular or best practices on feeding of livestock as observed in your area.

Answer: -----  
-----

2. Describe the care and management in various stages such as Pregnancy, lactation, dry period.

Answer: -----  
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3. Collect various extension advisories on livestock management from local government veterinary department, KVKs and private organizations. Discuss content of these advisories

Answer: -----  
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4. Discuss various locally available feed ingredient and fodder varieties. Share from your experience how they are used. Do you consider current feeding as balanced? What will be your suggestion to farmers?

Answer: -----  
-----

5. Discuss benefit and constraints of industrially manufactured compound feed marketed in your area.

Answer: -----  
-----

6. Collect a commercial compound feed pack of two different brands and compare the labels in terms of nutrient content.

Answer: -----  
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7. Discuss benefits and constraints of silage feeding to ruminants.

Answer: -----  
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Notes



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## UNIT6.5: Body condition scoring

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand the concept of body condition scoring and develop skill with experience.

### 6.5.1 Body condition scoring

Assessment of a cattle or goat's body condition score (BCS) gives a visual estimate of their body fat reserves. This in turn provides useful information on feeding and health status.

A BCS scale of 1 to 10 is normally used in cattle. If the BCS of any animal falls below 3 (on a scale of 1-10), urgent action must be taken to improve the condition. Any cattle with a BCS greater than 6.0 are considered obese. The best body condition score suitable for management and trading is between 4 to 5. Body condition score changes in different stages such as during pregnancy, during dry period, early, mid and late lactation. Before one can attempt BCS, knowledge of breed characteristics is essential. Some more reading and practical experience will be required before you can develop required skill.

#### **What to look for in BCS?**

Backbone: is it flat or is there a ridge? Can you see or easily feel notches?

Long ribs: can you see or easily feel the ribs? If visible how many can you see?

Short ribs: can you see the short ribs? What do they feel like? Are the rib ends sharp or rounded?

Hip bones: are the hip bones rounded or angular?

Rump: is the area between the pins and hip bones, flat, sunken or hollow?

Pin bones: are they pointed, "tap" like or rounded?

Tail head: is there a hollow between the tail head and pin bones? Is it a deep V or shallow U shape?

Thigh – is the area indented, flat or rounded? Is the muscle structure defined?

You can take help of your instructor to understand the following diagrams (Source: *DairyNZ*).

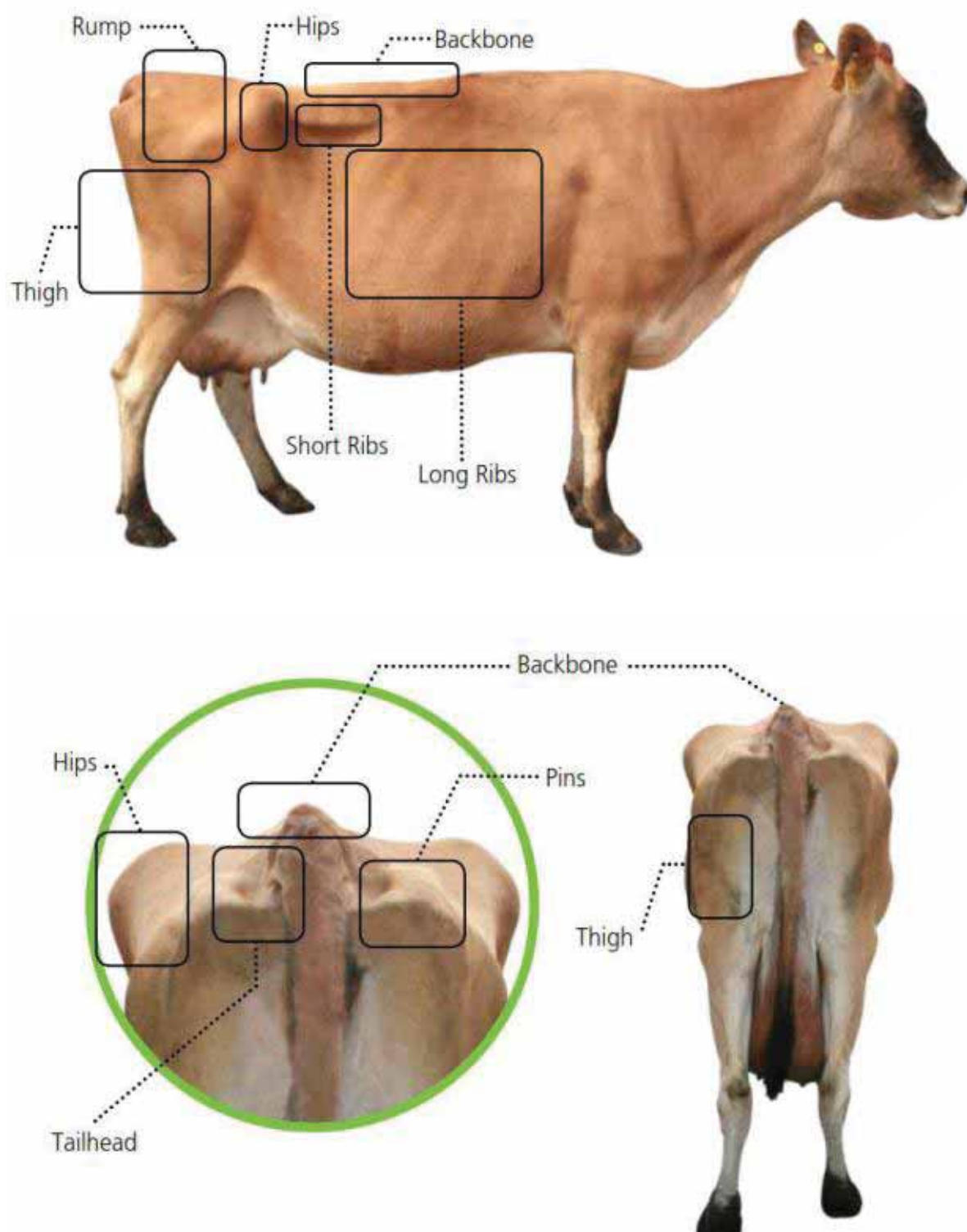


Fig 6.5.1: Body condition scoring











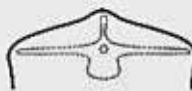





BCS	3.0	4.0	5.0	6.0
Backbone Rear view Side profile				
Long Ribs				
Short Ribs				
Hips				

Fig 6.5.1: Body condition scoring









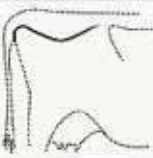
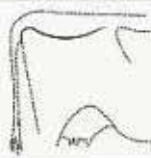
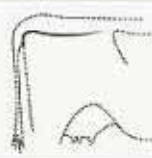
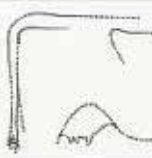
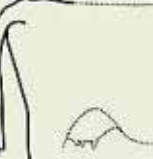
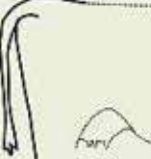


BCS	3.0	4.0	5.0	6.0
Pins				
Tailhead				
Rump				
Thigh				

Fig 6.5.1: Body condition scoring

## Body Condition Scoring in goat is shown below

BCS 1	Extremely thin.	Extremely thin and weak, near death.
BCS 2	Extremely thin.	Extremely thin but not weak.
BCS 3	Very thin.	All ribs visible. Spinous processes prominent and very sharp. No fat cover felt with some muscle wasting.
BCS 4	Slightly thin.	Most ribs visible. Spinous processes sharp. Individual processes can be easily felt. Slight fat cover can be felt over the eye muscle.
BCS 5	Moderate.	Spinous processes felt but are smooth. Some fat cover felt over eye muscle.
BCS 6	Good.	Smooth look with ribs not very visible. Spinous processes smooth and round. Individual processes very smooth, felt with considerable pressure. Significant fat cover felt over eye muscle.
BCS 7	Fat.	Ribs not visible, spinous process felt under firm pressure. Considerable fat felt over eye muscle.
BCS 8	Obese.	Animal is very fat with spinous processes difficult to feel. Ribs can not be felt. Animal has blocky obese appearance.
BCS 9	Extremely obese.	Similar to an eight but more exaggerated. Animal has deep patchy fat over entire body.

Table 6.5.1: BCS Chart for goat (Source: Presentation by Irshad A, College of Veterinary and Animal Science, Mannuthy, Kerala)

## Exercise



1. What is BCS ? and Explain.

Answer: -----

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Notes



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## UNIT6.6: Selecting animals

### Unit Objectives

At the end of this unit, you will be able to:

- Learn rules for selecting animals for milk and meat

### 6.6.1 Selecting dairy animal

The following extension advisory from BAIF Development Research Foundation, Pune can be referred for selection of animal for milk.

Proper selection is the first and the most important step to be adopted in dairying. Records are the basis of selection and hence proper identification of animals and record keeping is essential.

- Cross-breed animals with exotic inheritance of about 50 percent are preferable.
- Maintaining animals sustainable to the situation is the best policy. Bringing animals from different agro-climatic conditions causes problems due to non-adjustment in many cases. In case, purchase becomes absolutely essential it should be from similar environmental conditions as far as possible.

#### Selection of dairy cows

Selecting a calf in calf show, a cow in cattle show by judging is an art. A dairy farmer should build up his own herd by breeding his own herd. The following guidelines will be useful for selection of a dairy cow.

- Whenever an animal is purchased from a cattle fair, it should be selected based upon its breed characters and milk producing ability. History sheet or pedigree sheet which are generally maintained in organized farms reveals the complete history of animals.
- The maximum yields by dairy cows are noticed during the first five lactations. So generally selection should be carried out during First or Second lactation and that too month after calving.
- Successive complete milking has to be done and an average of it will give a fair idea regarding production by a particular animal.
- A cow should allow anybody to milk, and should be docile.
- It is better to purchase the animals during the months of October and November.
- Maximum yield is noticed till 90 days after calving.

### Breed characteristics of high yielding dairy cows

- Attractive individuality with femininity, vigour, harmonious blending of all parts, impressive style and carriage
- Animal should have wedge shaped appearance of the body
- It should have bright eyes with lean neck
- The udder should be well attached to the abdomen
- The skin of the udder should have a good network of blood vessels
- All four quarters of the udder should be well demarcated with well-placed teats.

## 6.6.2 Selecting animal for meat

Following are the characters of good meat animals:

**Head:** Face short, month and nostrils large: larger clear eyes, broad forehead: alert ears: wide between ears.

**Neck:** Short, thick, full at junction with shoulder.

**Shoulder:** Smoothly covered with flesh; compact on top, even with the body

**Breast:** Full in outline and well-extended.

**Legs (Fore quarter):** straight, short, wide apart strong, fore arm full.

**Chest:** wide, deep, heat girth full.

**Ribs:** well sprung, long close thickly covered

**Back:** broad, straight, thickly and evenly covered

**Loin:** thick, broad, well covered.

**Hips:** Neat: smoothly covered

**Rump:** long, level wide to dock; well covered.

**Thighs:** Deep, wide, full 5

**Legs (Hind quarters):** straight, short, strong set well apart; pasterns straight.

### 6.6.3 Criteria for good breeding animals

Following are the criteria for good breeding animals.

#### General appearance

- The animals should have straight and strong top line and muscular throughout the body.
- Animals should have long body with straight underline.
- Skin should be fine textured, loose and pliable. Weight should be according to the age

#### Fore quarters

Head: Medium in length, broad muzzle, large open nostrils, large bright eyes, broad foreheads, alert and fine ears and wide apart

Neck: Thick, medium length and blend smoothly in to shoulders

Breast: Wide and trim

Chest: Wide

Ribs: Well sprung, wide apart, long, covered with minimum amount of firm flesh, flat and long

Back: Muscular, straight and uniformly covered

#### Hind quarters

Loin: Thick, strong muscular and uniformly covered

Hip: Far apart, neatly laid in and smooth

Rump: Long and thick, wide and muscular

Thighs: Deep thick, and wide and muscular

Pin bones: Wide apart, lower than the hips, well defined

Udder: Strongly attached to the belly, halves evenly balanced and symmetrical. The texture should be soft, pliable and elastic with uniform sized teats with cylindrical in shape and free from obstruction

Flank: Deep and firm

Legs: Straight, strong, medium in length placed squarely and wide apart

Feet: Shorter and straight with deep heel and level sole.

#### Breed and sex character

The breed characters are appropriate to the breed

Male: Attractive, individuality revealing vigor, masculinity, impressive style and majestic carriage with graceful and powerful walk

Female: Femininity with impressive style and attractive carriage and graceful walk



1. What are the criteria/parameters to be followed during the selection of dairy animal? Explain.

Answer: -----

[illegible]

Notes



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## UNIT6.7: Hygienic milking and livestock product handling

### Unit Objectives

**At the end of this unit, you will be able to:**

- Learn about hygienic milk production
- Handling of livestock products.

### 6.7.1 Hygienic milking and livestock product handling

You may have to often guide farmers on hygienic milking and handling of livestock product (e.g. Milk, Meat, Egg). Drive for clean milk production is one of the most important extension initiative in India.

The key important factors that influence milk quality are:

- Feeding
- Health of the animal and treatment thereof.
- Milking process / milking environment

#### ***Hygienic practices during milking***

- Keep clean milking environment, free of dust and mud.
- Wash hand with soap and clean water before milking.
- Wash udder with clean cloth and warm water. Dry the udder with clean dry cloth.
- The milking should be complete, with no milk left in the udder after milking.
- The first few ml of milk should be discarded, as this contains a large number of micro-organisms. This fore stripping should be collected in a cup and not thrown on the floor, so that flies and other insects may not be attracted towards it.
- Milking should be done with full hands (not with knuckles), quickly and completely, followed by stripping if so required.
- Unhygienic practices such as dipping the fingers in milk and then wetting the teats to soften them should not be permitted.
- Sick cows should be milked at the end to prevent infection. (Milk from cows under antibiotic treatment should not be sold or consumed until 3 days after last treatment or as advised)
- After every milking, dip the teats into an 'antiseptic dip'.
- Use clean container for milking
- Release the cow from the milking area as soon as milking is finished
- After milking, sieve the milk through a strainer or clean muslin cloth to remove solid particles that may have fallen in during milking.
- Cover the milk to avoid contamination.
- Move the milk to clean and cool area.

Note: During milking the milker should not (a) have long nails (b) sneeze, spit or cough (c) smoke

## Exercise



1. Discuss in group what care should we take to ensure quality milk?

Answer: -----

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2. Why livestock product from animals under antibiotic treatment should not be sold or consumed?

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3. Discuss how to store eggs in village setting.

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## UNIT 6.8: Using communication devices

### Unit Objectives



At the end of this unit, you will be able to:

- Learn various initiatives related to use of communication devices like cell phones.

### 6.8.1 Using communication devices

A number of mobile applications are available nowadays. Following are few examples:



mPower Social

mPower's Livestock Management System (LMS) integrates mobile technology into the service provided by para-vets and reduces the gap between cattle owners and livestock professionals. The beauty of the system lies in its simplicity. LLWs collect and send livestock data with a mobile app. A livestock professional or vet then looks into the data collected and provides expert advice which the LLWs deliver to the livestock owners, completing the loop.



The National Dairy Development Board (NDDB) has launched a mobile app called 'Pashu Poshan', which recommends balanced diet for cows and buffaloes.

Other Apps:



Fig 6.8.1 Other communication devices

## Exercise



1. Download and discuss available mobile apps related to agricultural farming in general and livestock / animal health in particular.

Answer: -----  
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2. Discuss use of WhatsApp and other similar services for consultation with veterinarians and to receive information from farmers.

Answer: -----  
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3. Discuss use of mobile applications related to bar code or QR code reader (As required for mobile based data entry from animals identified with QR code / Bar code enabled ear tag)

Answer: -----  
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## 7. Development program implementation and marketing in livestock sector



Unit 7.1 – Sustainable development and goal for same

Unit 7.2 – Basic of development project management

Unit 7.3 – Business Management

Unit 7.4 - Expectation from development worker



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Better understand development programs and engage with institutions.
2. Learn about basic aspects of business management including marketing,
3. Promote livestock related economic activities relevant to your area.
4. Assist in development program implementation.

## UNIT 7.1: Sustainable development and goal for same

### Unit Objectives

At the end of this unit, you will be able to:

- Learn and appreciate about sustainable development goal

### 7.1.1 Sustainable development and goal

*“Development is not just about factories, dams and roads. Development is about people. The goal is material, cultural and spiritual fulfillment for the people. The human factor is of supreme value in development”*

*Sri Rajiv Gandhi*

Development is the act of improving or advancing the quality of life (standard of living) of people. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

On September 25<sup>th</sup> 2015, countries adopted a set of 17 goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. Animal health and livestock sector improvement is directly and indirectly linked to many of this goal.



Fig 7.1.1 Sustainable development goal

## Exercise



1. Discuss which sustainable development goal is related to animal health and livestock development program.

Answer: -----

[illegible]

Notes



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## UNIT 7.2: Basic of development project management

### Unit Objectives

At the end of this unit, you will be able to:

- Learn about basic concept of development project management.

### 7.2.1 Project management

Organizations implement projects to bring in development. A set of projects are called programme. Projects should always be based on government or organizational (Public or Private) policy and plan.



*Fig 7.2.1 Project management*

In development projects we employ as set of inputs and undertake activities to get some output (things you can see with your eyes). However, a project does not end with output. The output is utilized by people and in short run (medium term) it leads to some changes in the environment and we term these changes as outcome. The outcome in the long run leads to impact.

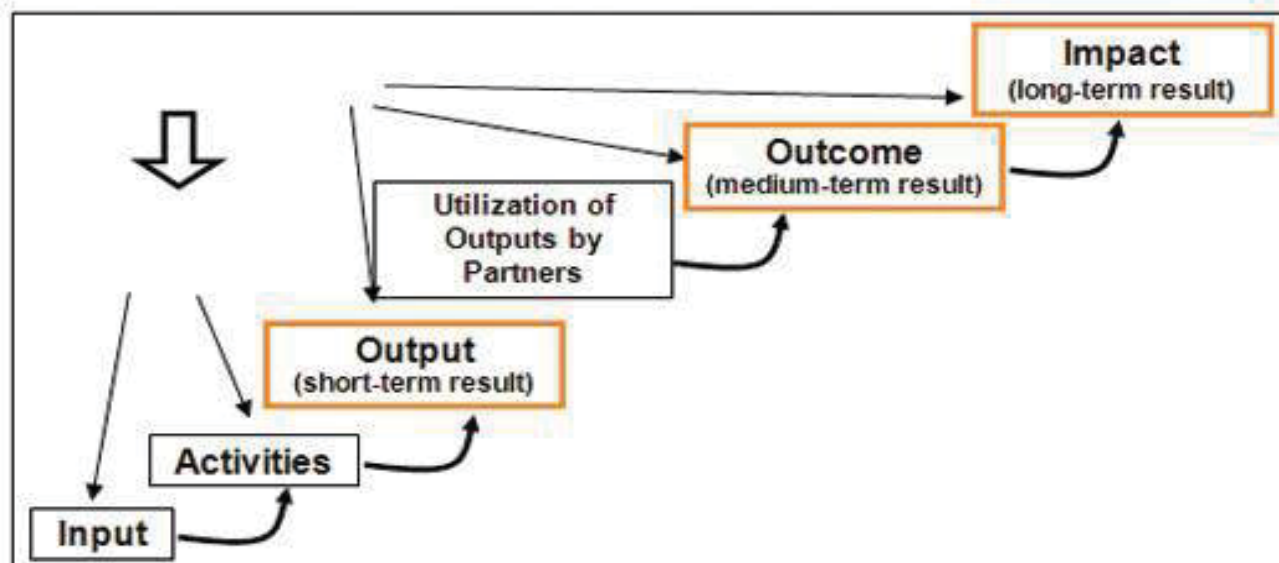
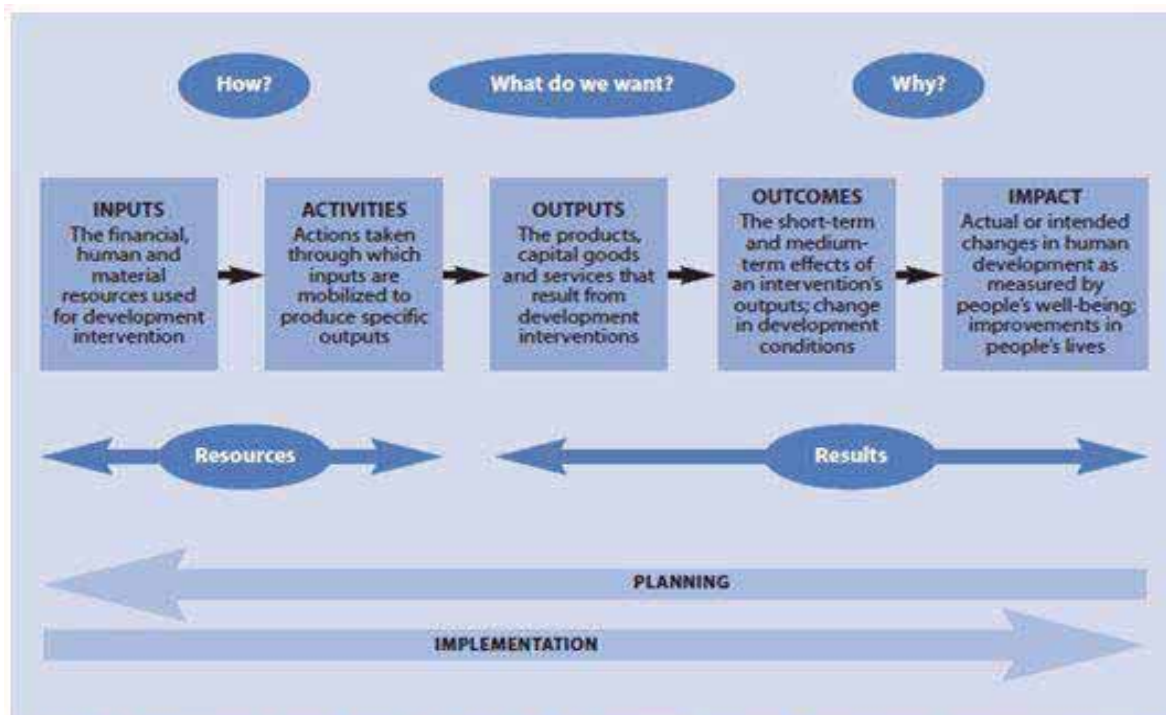


Fig 7.2.1 Project management

This can be explained with the help of following project:

For a project titled “Publication of book on dairy farming”, the project implementing agency will employ inputs such as fund, author or a writer who will undertake the activity of ‘collection of information’ and ‘writing of book’ to produce the output i.e. the ‘book on dairy farming’. The book will be used by a number of people and within a span of time, a number of people who are inspired by the book will start dairy farm within the area. Starting of farms by people who are inspired by the book can be termed as outcome of the project. All the farms established as an outcome of the book project will produce milk in the long run and increased milk production in the area in the long run can be termed as impact of the project. Impact seen is not necessarily entirely attributed to one project of a single agency. Outcome is a crucial indicator of the project’s success. While doing planning we focus on intended impact whereas while implementing we focus on getting desired outcome and impact.



Source: UNDP Handbook on Planning, Monitoring and Evaluation for Development Results (2009, p55)

Fig 7.2.1 Project management

The relationship between inputs, outputs and outcome are further explained in the following diagram.

#### Relationship between Inputs, Outputs and Outcomes

This figure shows the relationship between inputs, outputs and outcomes

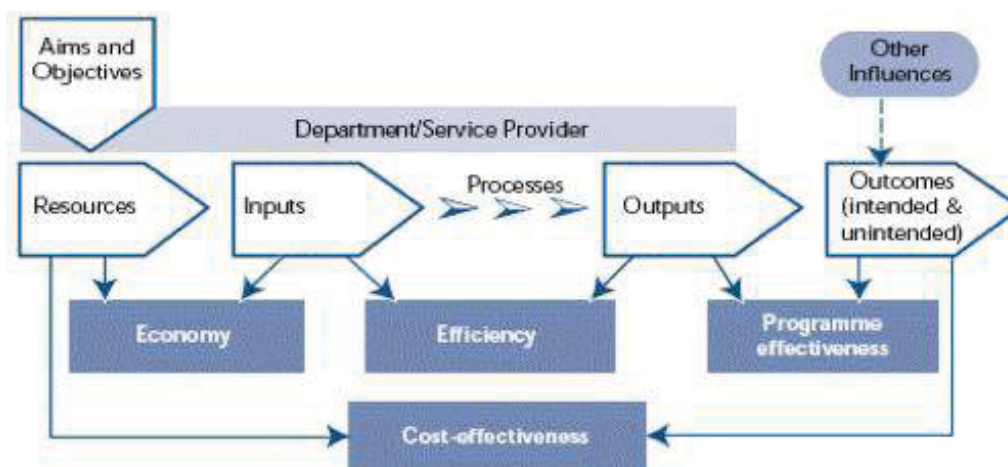


Fig 7.2.1 Project management

In the context of the above diagram efficiency is “Doing the thing right” and effectiveness is “Doing the right thing”

We can measure excellence of the project in terms of economy, efficiency and effectiveness as shown below:



*Fig 7.2.1 Project management*

However, for excellence besides economy a development project must integrate sustainability as shown in the following diagram. This means a development project must consider likely impact on environment, society and culture of people and take measures to mitigate the same.

## Exercise



1. Consider a project “Control of Foot and mouth disease in cattle”. Please list inputs, activities, output, outcome and impact of the project.

(Hints: Vaccine as input, number of vaccinated animal is output)

[illegible]

2. List out livestock sector based activities being implemented by various projects in your district. Are the activities undertaken suitable for your area? What else you would like to suggest?

[illegible]

Notes



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## UNIT 7.3: Business management

### Unit Objectives

At the end of this unit, you will be able to:

- Understand basics of business management and guide yourself and farmers

### 7.3.1 Business planning

Running a successful business requires both technical and business management skills. Before starting out one must carry out a thorough feasibility study to find out if the business will be profitable. A business plan is also needed to guide through beginning stages. In day to day business management variety of skills such as skills in marketing, distribution and record keeping among other are a must.

A feasibility study looks into three major areas where key questions must be addressed. One often needs to take help of experts to conduct feasibility studies.

1. Market Analysis
2. Organizational Analysis
3. Financial analysis.

If the feasibility study indicates that the business idea is sound, the next step is a business plan. The business plan continues the analysis at a deeper and more complex level, building on the foundation created by the feasibility study. A business plan minimizes the risk associated with a new business and maximizes the chances of success through planning. When business plan is designed by experts an entrepreneur / farmer should make all attempts to understand the assumptions and critical points. A business plan can be divided into four sections:

1. Organizational Plan
2. Management Plan
3. Marketing Plan
4. Financial plan.

A number of aspects need to be covered under each of the above sections. One can review large number of publications to understand key content of each of the sections.

### 7.3.2 Setting price of products

The following guidelines may be useful in setting product price.

- Consider the cost of production
- Watch the customer: Price should be related to the demand in the market place. Try to take account the non-price benefits that your customer will gain by using your product / services and estimate what they will be prepared to pay for them.
- Watch the competition: Weigh the good and bad points about your products and compare them with others on the market.
- Do not under price: If you are offering a better product than others on the market, you charge a premium price for it. It is much easier to set prices relatively high to start with and reduce them later.

### 7.3.3 Marketing

To promote the demand of products in market, the following are some points that can be considered.

**Quality:** The quality of your products / services should be consumer driven (what consumer wants).

**Value addition and product diversification:** You can add value to products by processing it. You can also add value to services too. Diversify product or services to capture more market.

**Know your customer:** Understand the need and purchasing power of your customers. Always respond promptly to customer complaints and maintain relationships.

**Communication:** Always communicate the solution your product or service provides prior to communication of benefits and actual demonstration of the product / service.

**Branding:** Proper branding helps customers to easily identify your product /services.

**Four marketing task includes:**

- Prospecting (Who can be your customers in broader sense?)
- Targeting (Find out the actual target group)
- Communicating (One to one, advertisement etc.)
- Selling (Actual selling)
- Servicing (Follow up and relationship development)

You can learn more about marketing by reading in detail about 7 Ps of marketing as shown in the following diagram:



*Fig 7.3.3 7P's Marketing mix*

### The Basic Tenets of Marketing

**Need pre-exist products:** Every product / service must address a specific need. So many fancy ideas have fallen by the wayside because they did not address specific needs. A customer must look to a product / service as a solution to his problem – an answer to his prayer. Products that succeed are those that effectively address problems.

The problem with most manufacturers / providers is that they offer product / service to either those who don't need them or those who cannot afford them. Sometimes the prospects do not realize the need. It could be because more important need dominates his / her list of priorities. Marketing serves to highlight the importance of these needs. It must communicate the impact of the solution on the producer's bottom line (profit).

**Identify the need:** The whole marketing process therefore begins with need identification. While the term might conjure up ghastly images of expensive market research, the truth might be simpler than it seems. Any marketer who has spent more than six months meeting farmers would work up a list of needs in minutes. The priority might change from location to location. A farmer in Rajasthan might worry about finding fodder in summer months while a farmer in Kerala might wrestle with problem of storage in the monsoons.

**Communicate the solution:** People don't buy things. They buy benefits that things provide. This adage is true not only for the consumer segment. It holds true for all buyers. For example, cattle feed may be classified as an industrial product since it is an input for milk production. Its cost must justify the added benefits that accrues from using it. All that remains is to communicate the benefit.

**Demonstrate the magic:** When one speaks of communication, the mind once again conjures up images of a high profile ad campaign. This may not necessarily be true. You need to show the magic your product works. Demonstration is a tool that cost a tiny fraction of an ad campaign and help sell much more.

**Being there every time:** One of the most crucial factors for success of any product is distribution. You must be there every time your customer needs you. You cannot expect him to postpone feeding his cows because your dealer ran out of feed stock. The customer never waits; he just switches to an available alternative. If the alternative meets his need adequately, he might just stay with it. Most manufacturers hesitate to invest in distribution chain. The general feeling is that middleman eats into profit. The fact however, is that the middleman ensures your presence where the customer needs you most. One sale lost could mean a customer lost for life.

**Building the product identity:** Like every person, every product aspires to be unique. This uniqueness leads to differentiation. Differentiation leads to choice and repeated choice leads to brand loyalty.

*Excerpts of talk delivered by Hansel D'Souza during seminar organized by SEA, CLFMA and ASA*

## Exercise



1. Work in group and present a brief business plan of starting animal health care service in a chosen area.

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2. . List some business ideas in livestock and animal health sector. Discuss on feasibility of such ideas.

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## UNIT 7.4: Expectation from development worker

### Unit Objectives

At the end of this unit, you will be able to:

- Learn expectation from you as implementer of development programs.

### 7.4.1 Expectation from development worker

Following things are commonly expected from a development worker at the field level:

1. Promote awareness of programs.
2. Help in targeted beneficiary selection as envisioned in the promoted projects / programs .
3. Work with selected project beneficiaries in implementing activities as envisaged in promoted programs.
4. Attend and cooperate during meetings / program of farmers' institutions / panchayats.
5. Inform / involve farmer leaders' / panchayat functionaries in selection of program beneficiaries.
6. Facilitate organization's / panchayat's endeavor to ensure convergence of development projects for synergy.
7. Motivate and handhold formation of self-help groups.
8. Guide farmers on business options and basic economics of various livestock linked activities.
9. Motivate farmers to produce for market and ensure aggregation, collective marketing of livestock products.
10. Provide market related information to farmers.
11. Provide information on livestock farm inputs e.g. feed, fodder, supplements etc.

Notes



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**ASCI**  
Agriculture Skill Council of India

## 8. Assisting in animal welfare, breed conservation and disaster management

Unit 8.1 – Animal Welfare

Unit 8.2 – Conservation of indigenous livestock

Unit 8.3 – Disaster Management



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Identify cruelty to animals and appreciate human animal conflict issues.
2. Learn about conservation of indigenous livestock.
3. Understand ways to support disaster preparedness and handling.

## UNIT8.1: Animal Welfare

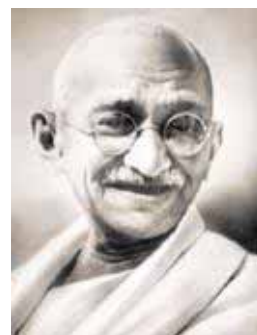
### Unit Objectives



At the end of this unit, you will be able to:

- Learn some basic concepts of animal welfare and common cruelty.

### 8.1.1 Animal Welfare



The greatness of a nation can be judged by the way its animals are treated.

- Mahatma Gandhi

John Webster defines animal welfare by advocating three positive conditions: Living a natural life, being fit and healthy, and being happy.

The ultimate goal of Animal Welfare is the effort to ensure the following 'five freedoms' for all animals.

1. Freedom from thirst, hunger and malnutrition – by ready access to fresh water and food to maintain full health and vigor.
2. Freedom from discomfort – by providing a suitable environment including shelter and a comfortable resting areas.
3. Freedom from pain, injury and disease – by prevention and treatment.
4. Freedom to express normal behavior – by providing sufficient space, proper facilities and company of the animal's own kind.
5. Freedom from fear and distress -by enduring conditions which avoid mental suffering.

### 8.1.2 Instances of cruelty commonly inflicted on animals

Animal cruelty means inflicting suffering, distress, pain on animal.

Following are some of instances of common cruelty:

- Starved unproductive animals on streets left to fend for themselves.
- Diseased or weak animal overloaded and over worked to pull vehicles. Lashing, whipping and torture of such animals.
- Pigs and poultry being transported from one place to another in a manner which subjects them to pain and suffering.
- Exhibition of blood sports, using animals such as bulls, rams and cocks.
- Animals made to perform in circuses.

The cruelty inflicted on animals is an offence punishable under the Prevention of Cruelty to Animals Act 1960 and they are summarized as follows:

1. Beating, kicking, overriding or over loading of animals. Torturing and treating animals so as to subject it to unnecessary pain and sufferings.
2. Employing for work an animal which is unfit or suffering from any disease, infirmity, wound or sore.
3. Administration of injurious drugs and other substances to animals.
4. Carrying any animal or bird in such a manner so as to inflict unnecessary pain.
5. Keeping an animal or a bird in a cage which is not big enough to permit the animal / bird reasonable movement.
6. Keeping an animal tied with an unreasonably short or unreasonably heavy chain or cord.
7. Abandoning an animal knowing that it will be exposed to starvation.
8. Needlessly mutilating any animal.
9. Owning an animal and not providing it with sufficient food, water and shelter.
10. Organizing fights between animals or birds.

As per the act, the following are not considered as cruelty if conducted as per appropriate procedure / method:

1. Dehorning of cattle, castration, branding or nose roping of any animal.
2. Destruction of any animal under the authority of any law
3. Experimentation on animals
4. Slaughter of animals for food for human.

### 8.1.3 Human animal conflict

Human-Wildlife Conflict is any interaction between wildlife and humans which causes harm, whether it is to the human, the wild animal, or property. (Property includes buildings, equipment, livestock and pets, crops fields or fences.).

The key reasons for human-animal conflict are encroachment of human being in wildlife habitat.

Livestock grazing inside forest areas is one of the major reasons of conflict. Livestock becomes easy prey for wild carnivores, causing conflict and leading to retaliatory killing of large carnivores. Livestock grazing also aids in spread of communicable diseases from domestic to wild animals and vice versa. Heavy grazing by livestock increases soil erosion in forest areas. Large collection of tree fodder for livestock from forest affects the forest quality adversely.

Since a number of pastoral communities are dependent on forest for grazing of their herd of animals, alternatives ways of grazing such as rotational grazing can be worked out in consultation with local pastoralists.

As awareness cum protection strategy animal health workers are engaged by agencies in forest fringe villages to:

- Educate and help farmers rear livestock under stall and other alternative feeding conditions.
- Ensure complete preventive vaccination of livestock thus reducing risk of disease spread to wildlife.
- To aggressively monitor diseases in livestock in forest fringe areas for quick action.

## Exercise



1. Discuss instances which you feel are cruelty to animals. Are they punishable under law?

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2. Discuss the importance of Wild life.

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## UNIT 8.2: Conservation of indigenous livestock

### Unit Objectives

At the end of this unit, you will be able to:

- Understand your role in conservation of indigenous livestock

### 8.2.1 Conservation of indigenous livestock

Indigenous recognized breeds of livestock in India are robust and resilient and are particularly suited to the climate and environment of their respective breeding tracts. They are endowed with qualities of heat tolerance, resistance to diseases and the ability to thrive under extreme climatic stress and less than optimal nutrition. There is huge potential to enhance the productivity of the indigenous breeds of India through professional farm management and superior nutrition. The “*Rashtriya Gokul Mission*” of Government of India aims to conserve and develop indigenous breeds in a focused and scientific manner.

National Bureau of Animal Genetic resources (NBAGR) located in Karnal, Haryana is the nodal center in India for all related information on breeds and conservation strategies.

A large number of *Gaushala* (Protective shelters for cows) in India have quite sizable population of purebred animal of Indigenous breeds. Under Government of India supported schemes, renewed focus has been given to set up integrated indigenous cattle centers (*Gokul Grams*) in the native breeding tracts to act as dependable source of supply for high genetic breeding stock for farmers. Support are also being provided for establishment of Breeder’s Societies: *Gopalan Sangh*. Provisions are being made to give incentive to farmers maintaining elite animals of indigenous breeds.

An animal health worker / veterinary assistant working in field condition can contribute immensely to the initiatives aimed at conservation of indigenous animals by:

1. Promoting available schemes e.g. promotion of breeder associations / community rearing of young animals etc.
2. Helping government and private agencies in data collection related to performance recordings.
3. Assist *Gaushala*’s and *Gokul Grams* in maintaining veterinary aid centers.

Notes



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## UNIT 8.3: Disaster Management

### Unit Objectives

At the end of this unit, you will be able to:

- Understand your role in disaster situation.

### 8.3.1 Disaster Management

Livestock are greatly affected by disasters like drought and flood.

During drought poor quality forage and limited energy intake leads to decline in production. It also adversely affects fertility. It is known that parasite eggs tend to concentrate more in the lower part of the forage plants, thus short pastures due to drought conditions can increase the potential parasite load. This would tend to suggest that strategic parasite control programs are more important during drought situations.

Creation of feed and fodder bank is an important initiative to meet the needs of livestock during drought and floods. The following types of feeds and fodder can be stored for meeting the above emergencies.

1. Feed bank from ingredients not fit for human consumption: The feed ingredients which become unfit for human consumption can be spared for livestock use and stored in feed banks either in silos or stores after testing it for aflatoxin contents, pesticides and drug residues.
2. Fodder Banks: Grasses from periphery of forest area, wastelands and farmlands may be harvested and stored as hay in briquettes and high density stacks. Crop residues of the major cereals like rice and wheat straws, coarse cereals, legumes, haulms left after removing grains from the crops may be stored in these banks.

There are certain diseases which are more common during drought and flood periods so these diseases need more attention so as to prevent its outbreak. The most common diseases are Foot and Mouth disease, Hemorrhagic septicaemia, Black Quarter, Anthrax, Enterotoxaemia, Coliobacillus, Surra, Babesiosis, Thelaeriosis, Anaplasmosis, Pox disease, Mastitis, Brucellosis, Ring worm, Ascariasis, Fascioliasis, Microfilariasis, Tick infestation and Mange etc.

To control and prevent these diseases, the following measures are to be adopted:

1. Vaccination: In drought conditions animals become more susceptible to diseases due to stress and thus all vaccination schedules should be followed.
2. Deworming: To check the parasitic infestation regular deworming should be followed.
3. Disinfection of animal sheds.

Following are the role of animal health worker / veterinary assistant in disaster management:

- To help in stocking (as preparedness) and mobilization of feed / fodder.
- To work with community and disaster management authority to provide safe passage to animals / livestock.
- To provide care / shelter to animal in distress.
- To undertake appropriate measure for carcass disposal.
- To undertake culling and other measures in disease related emergency under the guidance of authority.



*Fig 8.3.1 Animal during flood ( Credit : Ritu Raj Konwar / The Hindu )*

Exercise



1. What is disaster management?

Answer: -----

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2. What is the role of Animal health Worker in disaster management?

Answer: -----

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**ASCI**  
Agriculture Skill Council of India

## 9. Implementation of animal breeding services in small farm animals

Unit 9.1 – Understanding the reproductive system

Unit 9.2 – Basics of animal genetics

Unit 9.3 – Signs of heat

Unit 9.4 – Artificial insemination

Unit 9.5 – Parturition (Giving birth)

Unit 9.6 – Managing unproductive animals (Reproductive failure)



## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Understand concept of animal breeding in small farm animals.
2. Assist farmers with information on quality animal selection and purchase.
3. Conduct artificial insemination in goat and pigs.
4. Assist farmers in handling common difficulties related to animal birth.

## UNIT9.1: Understanding the reproductive System

### Unit Objectives

At the end of this unit, you will be able to:

- Learn some basic concepts related to reproductive system and reproductive cycle of Goat and Pig.

### 9.1.1 Reproductive System

In unit 2.1.2 we have briefly discussed about organ system. Out of the 9 systems indicated earlier, reproductive system is one system which one needs to know in some details to understand breeding and to provide breeding related services.

The following diagram indicates various parts of the reproductive system in female small farm animals. Two most important organs in the system are:

- Ovary - The female sex gland that produces the ova or egg.
- Uterus - A female organ where a fertilized ovum develops into the fetus
- Cervix - The cervix is the lower outlet of the uterus. It constitutes the gateway between the uterus and the vagina.

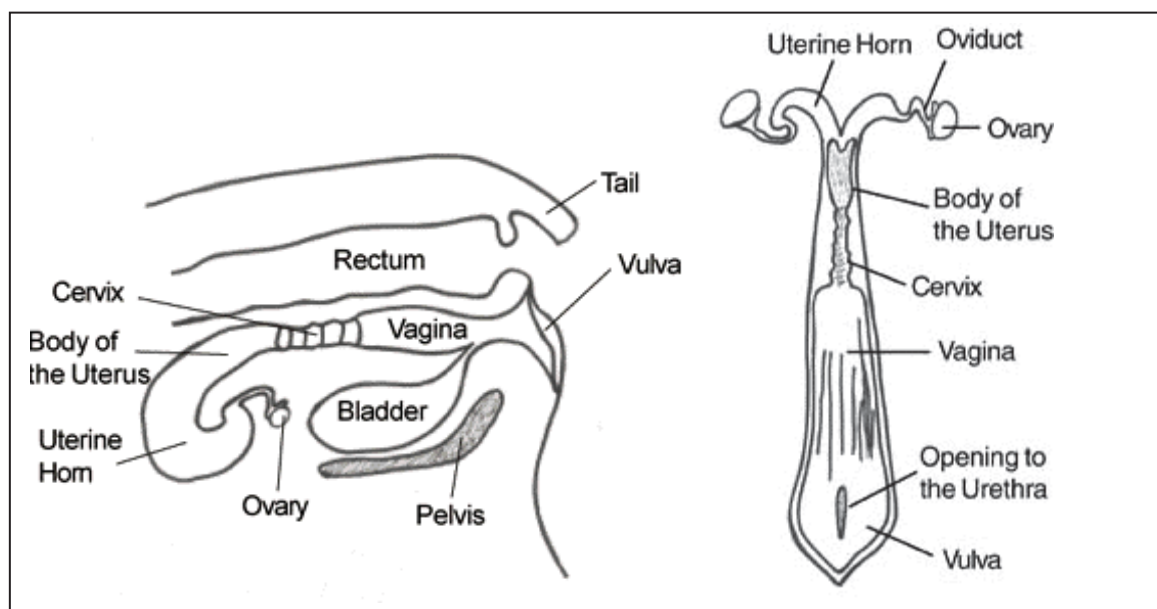


Fig 9.1.1 reproductive System

### 9.1.2 Some important concepts

Male sex cells are called sperm and female sex cells are called eggs or ova. In order for reproduction to occur, a sperm cell must unite with an egg cell. This is called fertilization and it results into a single cell called as 'zygote'. The zygote which gets implanted in uterus develops into fetus.

Gestation period is the time in which a fetus develops. The period begins with fertilization and ends with birth.

Birth is the act or process of bearing or bringing forth offspring. Giving birth is called kidding, lambing and farrowing in goat, sheep and pig respectively. Ability of an animal to produce large number of living young is called 'Fertility'.

Puberty in animal is the period when reproductive system starts functioning with appearance of first estrus (heat symptom).

Heat or estrus is the period when the female will accept the male and mate. The 'estrus cycle' indicates series of changes that occur in the female animals from one period of estrus (heat) to another. Estrus (Heat) should not be confused with estrous cycle, it is only a part of the cycle. For example, estrous cycle in female goat is every 18-21 days but duration of estrus 14-48 hours only.

'Service' is the process in which mature male covers the female i.e. in heat with the object to deposit spermatozoa in the female genital tract.

The successful union of male and female gametes (Sperm and Ova) and implantation of zygote is known as conception.

Following table indicates some common parameters in female goat:

Parameters	Value
Age of attainment of puberty	7 months to 1 year
Approximate weight at first mating	15-18 kg
Age at first mating or insemination	8 months to 12 months
Estrous cycle	Generally, every 18-21 days
Duration of heat	14-48 hours
Gestation period	145-156 days
Age at first kidding	13-17 months
Ideal kidding rate	3 in 2 consecutive years
Service period	45 days
Minimum dry period	30 days

Table 9.1.2 Common Parameters in female goat:

Age at puberty for a buck (male goat) is 5–7 months. A buck should be put into service only when it is 10 to 12 months of age. The age up to, which bucks, can be used for breeding purpose is 6–8 years.

The does (female goat) are more or less continuous breeders. It is better to breed the female once a year. Goats can be made to kid twice in 18 months. Most does come in heat in September and March. The buck is sexually more active in winter and spring. The best time of mating/insemination is 10-12 hours after the onset of heat and a second service again after 10 hours if heat continues.

Female pigs usually attain puberty around 6-8 months of age when they attain about 50 kg of body weight. Male requires about 7-8 months to attain sexual maturity.

The average length of the estrous cycle in pig is 21 days with a range of 18-24 days.

Weaning is the period in which female pig or sow gradually ceases to provide milk for their young one or piglets. Piglets are weaned from the sow after 5-8 weeks.

Male or female pigs are generally used for breeding after 7/8 months of age when they attain sexual maturity. Gestation period is 114 days  $\pm$  5 days i.e. 3 months, 3 weeks and 3 days. Sows (Female pig) again come into heat after 1 or 2 weeks of weaning and should be rebred in next estrous cycle.

The production cycle again starts with mating of sow with boar. Total time for one cycle is 164 days. In normal condition, 2 litters are possible in one year with average feeding and general management regime.

Notes



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## UNIT9.2: Basic of animal genetics

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand basic concept of genetics.

### 9.2.1 Basic of animal genetics

Heredity is the passing of traits (characters or qualities) from parents to their offspring. A gene is the basic physical and functional unit of heredity. Transmission of genetic factors from parent to offspring's is called 'inheritance'.

Genetics studies the transmission of genes from one generation to another. A blueprint of traits or characteristics is established for the new offspring from the genes transferred from both parents.

The genotype is the genetic makeup of an animal while the phenotype is the physical makeup.

The genetic constitution though influences – but is not solely responsible for – many of traits or characters. The phenotype is the visible or expressed trait. The phenotype depends upon the genotype but can also be influenced by environmental factors. This is why better management of high yielding animals are must to get maximum of its genetic potential.

A breed is a specific group of domestic animals having homogeneous appearance (phenotype), homogeneous behavior, and/or other characteristics that distinguish it from other group of animals of the same species. There are number of breeds of goat, sheep and pig in India.

The main objective of breeding (mating and production of offspring by animals) is to produce superior quality of offspring combining good quality (Traits, character) of parents. There are different methods of breeding like selective breeding, in-breeding, out-breeding, cross breeding etc.

The process of breeding animals for a particular trait or character is called selective breeding.

Inbreeding is the production of offspring from the mating or breeding of animals that are closely related genetically. In livestock breeding, breeders may use inbreeding to establish a new and desirable trait in the stock, but one needs to watch for undesirable characteristics in offspring (known as inbreeding depression), which can then be eliminated through further selective breeding or culling. Farmers should be careful about inbreeding as it can reduce productive and reproductive performance of animals in subsequent generations.

Outbreeding or outcrossing is the mating of unrelated animals. In this method, the chance of transfer of undesirable character to the next generation is less. This is essential to retain pure breed characteristics.

Cross breeding is the method of breeding female of one breed with male of other breed. Crossbreeding is common in pigs in India.

Various state governments in India declare livestock breeding policy. For example, in Maharashtra cross-breeding among sheep and goat is strictly prevented except for research purposes. The same policy identified Osmanabadi and Sangamneri breeds of goat and Deccani breeds of sheep as germplasm for genetic up-gradation of non-descript breeds in respective species. A non-descript breed lacks any unique characteristics and are very low producers.

India has a large number of indigenous farm animal breeds, mostly developed by natural selection for adapting to local agro-ecological conditions. These breeds are hence hardy and suited to the conditions in the area of their origin.

There are two type of breeding e.g. Natural breeding and artificial insemination. Largely natural breeding is common in India where farmers use buck or boar maintained within their farm or hired from neighbor's farm. In natural breeding one should ensure that male should have superior breed characteristics specific to the concerned breed and is free from disease.

Nowadays, artificial insemination is being popularized in goat and pig farming. In this method the semen is collected from male of superior breed characteristic and same after processing in laboratory is then introduced to the female genital organ using scientific apparatus.

The above information indicates that, breeding is a scientific activity and is governed by law (Refer breeding policy of your state). Success of farm enterprise depends on proper breeding plan. It is better to have a designed breeding plan for the entire community. Note that a good understanding of the local breeding method and constraints is essential before attempting to advice on breed improvement.

**Exercise**

1. Collect names of various breeds of goat, sheep and pig found in your area along with their breed characteristics. Can you help farmers to select best breed to farm with?

Answer: -----

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2. Name few desirable characteristics (or traits) in meat animals. Share your experience on community practices related to breeding (to be facilitated by instructor)

Answer: -----

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3. Why is better feeding / management a must to get best out of genetically superior animals?

Answer: -----

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## UNIT9.3: Signs of heat

### Unit Objectives

**At the end of this unit, you will be able to:**

- Detect heat in small farm animals.

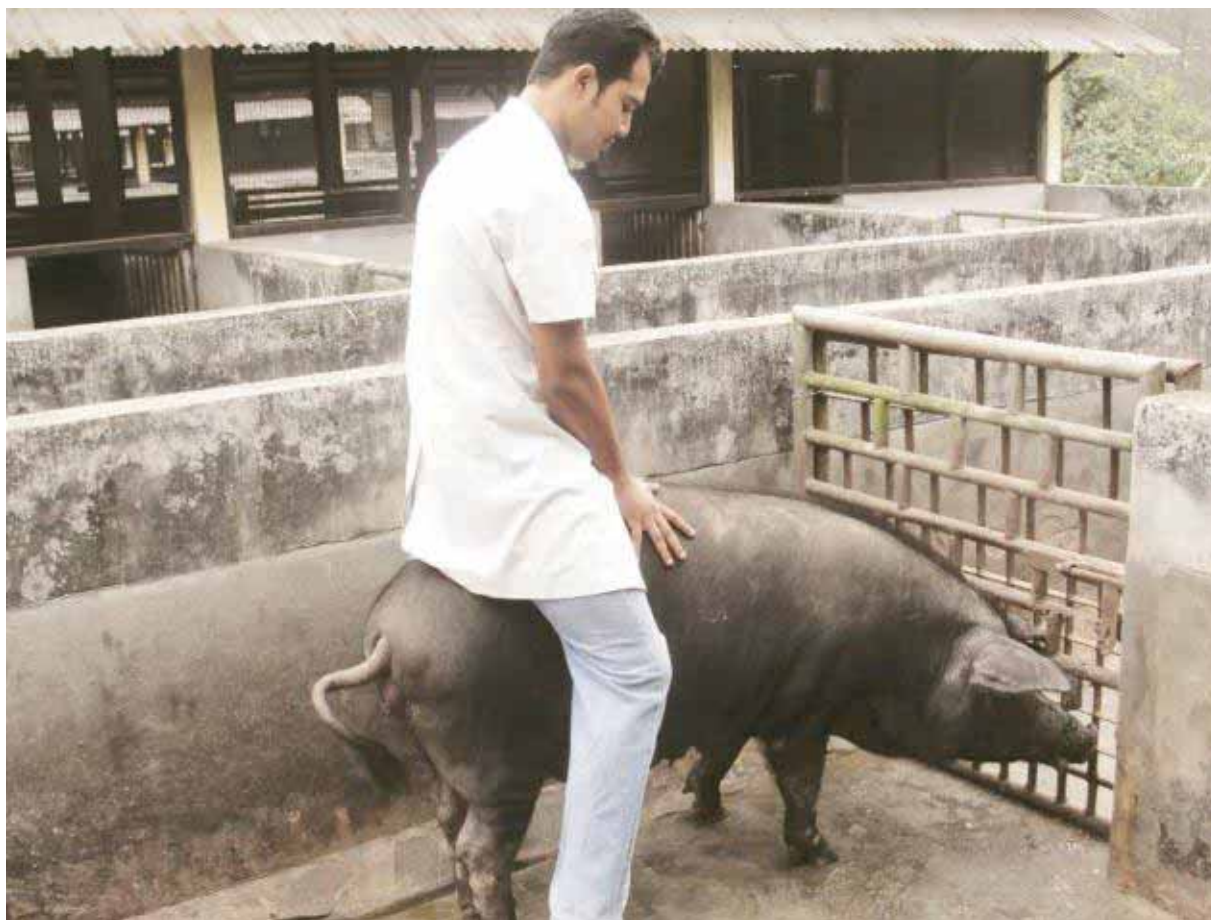
### 9.3.1 Signs of heat

The signs of heat in female goat are as follows:

- Wagging of tail. The frequency of tail movement increases in the presence of males.
- Frequent bleating, more so when the goat is alone.
- Excitement or restlessness.
- Lack of interest in feed.
- Drop in milk yield.
- Vulva becomes swollen.
- There is small quantity of clear discharge from the vagina.
- Doe anxiously goes seeking the buck.
- It remains close to the buck and allows mounting.
- It mounts on other goats and allows to be mounted by others.

The signs of heat in female pigs include:

- Frequent urination
- Swollen vulva and pink vaginal mucous membrane
- Presence of sticky mucous at vulva
- It attempts to mount or ride other pigs
- Tail upright and flicking up and down
- Standing reflex: When pressure is applied on the back of the female pig on heat, it does not move.



*Fig9.3.1 Riding test for checking standing reflex in Pig*

*(Photo credit: Dr.K. Ahmed, DBT funded project on rural development, AAU)*

Heat sign in pig remains for 1-3 days. The standing reflex appears on the 2<sup>nd</sup> day. Best time to mate the sow (female pig) is after 6-8 hour of showing standing reflex. Second service at 12 hours after the first service is advocated to get higher conception rate and litter size (A litter is the multiple offspring at one birth from the same mother)

Notes



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## UNIT9.4: Artificial insemination

### Unit Objectives

**At the end of this unit, you will be able to:**

- Understand the process of artificial insemination (A I) in Pig and Goat

### 9.4.1 Artificial insemination

Artificial insemination (A I) is the process of collecting semen from a certified male and depositing it into the female genital tract. Both collection and insemination (deposition) are done through artificial means using scientific apparatus.



*Fig 9.4.1 Ongoing training program on A I in Goat at Goat Research Station, Burnihat, Assam*

The technology provides unique opportunity for the genetic improvement of the species of animal to which it is applied. The technique involves various steps by which semen from selected disease free male animal of higher genetic merit is collected, evaluated and processed for storage using scientific procedures.

In pig it is possible to inseminate artificially 20-30 numbers of female pigs (sows) from a single ejaculate of male.



*Fig 9.4.1 Artificial insemination in Pig*

The national research centre on Pig, located at Rani, Guwahati, India list the following pointers as the reason why A I in pig is to be carried out.

1. To achieve the rapid genetic gain through extensive use of semen from genetically superior boar.
2. A I eliminated the cost of maintenance of a breeding boar.
3. Upgrading and crossbreeding can be achieved for genetic improvement within short span of time.
4. Inbreeding depression can be eliminated by selective breeding with high genetic potentiality.
5. It allows use of semen from selected boar at a very distant place on a large scale (even outside district / state)
6. It minimizes the spread of sexually transmitted diseases.

An animal health worker is not supposed to collect semen from male pig in field condition. However, he can assist a veterinarian in organized farm context. The following advisory describes the process.

### Steps in collection of semen from boar

1. Select healthy breeding boar of known pedigree (boar with recorded ancestry or lineage). It should have sound sex drive so that semen can be collected as and when needed for AI purpose.
2. Semen can be collected by two methods:
  - a) Collection by using artificial vagina: For this a female pig in heat or cloth and wooden dummy is used. The breeding boar is driven forward to the dummy and as soon as it mounts on the dummy the well prepared artificial vagina is placed around the male genital organ (Penis). The male ejaculates in the artificial vagina. The semen sample that is deposited in the collecting graduated pan is procured for further use.
  - b) Collection by hand pressure: The semen can also be collected by hand pressure using certain gloves. For this also same type of dummy and collecting pan or flask are used during collection.
3. Examination and evaluation of semen: For this a well-equipped semen processing laboratory is needed where pre sperm volume of boar semen is separated and rich portion is examined for color, density, volume and presence of debris. After gross examination, semen sample is examined for motility, total count, live and dead sperm etc.
4. Dilution or extension of semen- The net semen quantity received from per ejaculate is diluted using approved diluent based on requisite number of doses.
5. Storage and cold handling: For artificial insemination storage of semen is very important step and is done carefully using scientific methods.

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The step by step process of artificial insemination in Pig is described in the following publication of Department of Biotechnology (DBT) Government of India funded research project on rural development being implemented by Assam Agricultural University.

### Steps in artificial insemination in pig

1. Confirm standing heat (Riding test)
2. Clean the vulva and the surrounding region (Perineal region)
3. Lubricate the catheter with non-spermicidal jelly or few drops of semen
4. Open the vulvar lips
5. Insert the catheter into the cervix upward and forward (twist anti-clockwise in case of spiral catheter no twisting is required in golden pig catheter)
6. Confirm locking of catheter by test pulling. Slight resistance while pulling indicates proper placing of catheter.
7. Pre-warm the semen bottle / bag in a container with lukewarm water at 35 - 37°C for 15 min.
8. Invert the semen bottle / bag two or three times gently to mix the semen.
9. Fit the semen bottle / bag to the AI catheter.
10. Lift the semen bottle / bag above the level of vulva. Semen will be expelled due to gravitational force.
11. Apply slight pressure on the semen bottle/bag (if required) to expel semen.
12. Gently rub sow's back and flank during the insemination.
13. Wait for 2-3 min after all the semen has been expelled.
14. Gently withdraw the catheter.

Source:

Published handout

DBT funded project on rural development, Government of India

Department of Animal Reproduction, Gynecology and Obstetrics.

Assam Agricultural University

### 9.4.1 Steps

#### Artificial insemination in goat:

Following is the step by step process of artificial insemination in goat as practiced in Goat Research Station, Assam Agricultural University, Burnihat, Assam. (Courtesy: Dr. Pranjal Borah)

##### Step-1

Collection of semen from select buck by using artificial vagina and laboratory processing / storage.



*Fig 9.4.1 Semen collection from buck*

##### Step-2

Heat detection in doe and preparation for artificial insemination at appropriate time i.e. 24 hours after onset of heat or estrus.

##### Step-3

Thawing of semen straw (Semen straw stored in liquid nitrogen should be are taken out and put in the warm water 37°C for 30 second.)



*Fig 9.4.1 Thawing of semen straw kept in liquid nitrogen prior to use*

**Step-4**

Wipe and dry the semen straw with the help of a clean cotton cloth or towel



*Fig 9.4.1 Wiping and drying of semen straw after thawing*

**Step-5**

Load the semen straw (Manufacturing end) into the artificial insemination gun, and cut the laboratory end of the straw perpendicularly by a sharp scissor.



*Fig 9.4.1 Loading of semen straw*

**Step-6**

Cover the loaded A.I gun with disposable plastic sheath



*Fig 9.4.1 Covering of loaded A I gun with disposable plastic sheath*

**Step-7**

Lubrication of vaginal speculum (by Vaseline / Glycerin)



*Fig 9.4.1 Lubrication of vaginal speculum prior to use*

Step-8

Hold the goat by raising the hind quarter for insemination

Step-9

Insert the lubricated vaginal speculum first sidewise and then rotate to view the os cervix or mouth of cervix.



*Fig 9.4.1 Insertion of vaginal speculum (First sidewise and then rotate)*



*Fig 9.4.1 viewing of os cervix*

**Step-10**

Deposit the semen by pressing over the os cervix



*Fig 9.4.1 Insemination of semen using the AI gun*

**Step-11**

Remove the vaginal speculum by rotating it side wise.

NB: All artificial insemination appliances and equipment should be sterilized prior to use (Boiling in pressure cooker in field condition)

**Exercise**

1. List the tools/equipments required for the Artificial Insemination.

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2. What are the steps to be followed during Artificial Insemination in Goat?

Answer: -----

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Notes



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## UNIT9.5: Parturition (Giving birth) \*

### Unit Objectives

**At the end of this unit, you will be able to:**

- Recognize the signs that parturition is beginning.
- Know when parturition is normal.
- Assist with parturition when necessary.
- Care for the mother and newborn.

### 9.5.1 Parturition in Goat and Sheep

Sheep and goats may frequently have twins (2 young) or triplets (3 young). You will know when the goat or sheep is about to give birth as:

- The animal keeps away from others.
- The vulva is swollen and the skin is loose.
- The animal becomes restless and does not eat well.
- A discharge from the vulva will start a few days before parturition.
- The sheep will lie down and stretch the neck back to look at the sky (star gazing) and lick its lips.
- The sheep will strain to push out the lamb.

#### Normal parturition

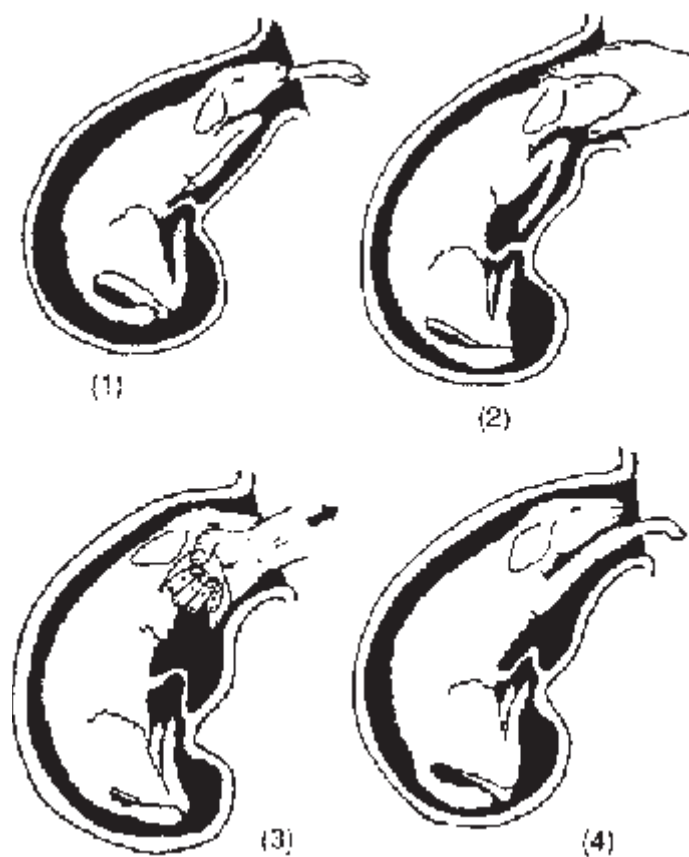
Animals may give birth while standing or lying down. The head and both front legs appear while sometimes both the hind legs will appear. The young mother may have some problems in giving birth.

#### When and how to help in parturition

The young may be in an abnormal position and the birth is difficult. If you want to help you will need a bar of soap and clean water. Scrub your hands and fingernails then wash the area around the vagina. Soap your hands well and insert one hand into the vagina. When you have found what the problem is, correct the position of the young so it can be born. Carefully feeling for the leg joints will tell you which way round the young is.

You can hold the head but do not pull the young by the jawbone as the bone will break. You can use a clean rope tied around a leg above the fetlock joint to pull. Pull in a downwards direction as the mother strains.

If there are twins or triplets in the uterus you will have difficulty sorting out which legs belong to which one. Try to pull out the one nearest the vagina first. A newborn animal should try to breathe immediately after it is born, if it does not breathe you can put a straw into a nostril (nose) to stimulate breathing. If you hold it by the back legs and swing it gently back and forth, any mucous blocking the mouth and lungs will be forced out.



*Fig 9.5.1 Parturition in Goat and Sheep*

#### **Care of the mother and newborn**

Immediately after giving birth the mother should be given fresh clean water. Check that she is producing milk from both teats and allow the newborn to suckle colostrum.

If the teats of a goat are fat with milk the young may have difficulty in suckling. Squeeze a little milk out so the kids can suckle easily. If she has produced triplets try to foster one on another mother.

If the mother had difficulty giving birth check that there are no dead young still in the uterus. If there are, remove them as they will cause an infection which will kill her.

The afterbirth should come out within 3 hours. If it has not appeared after 14 hours you will need to consult with veterinarian.

### 9.5.2 Farrowing in Pig

A well fed sow can produce at least 10 piglets (litter) from each pregnancy and may have 2 litters each year.

#### Signs that the pig is ready to farrow

- The sow becomes restless and starts to make a nest within 24 hours of giving birth. The teat will produce milk when gently squeezed.
- Blood stained fluid may be passed from the vagina 1 to 2 hours before birth begins and if small greenish pellets appear the first piglet will appear within an hour.
- Gently rubbing the udder will make the sow relax and lie on her side in the position to give birth.

#### Normal farrowing

Farrowing is a natural process and the sow will usually need no help. Once the first piglet is born the others, and the afterbirth, will quickly follow. Farrowing should be completed within 2 to 3 hours. The navel cord will break (you do not need to cut it) and the piglet will immediately search for a teat and milk. If the navel bleeds, tie it tightly with a clean string or cord.

#### When and how to help in farrowing

If the sow shows all the signs of farrowing but she has not produced a piglet and is pawing with a hind leg, or if 45 minutes has passed since the first piglet appeared and there is no sign of the second you will have to help the sow.

- Wash your hands and arms with warm water and soap and scrub under your fingernails.
- Wash the region of the vulva.
- Make your hands soapy or put olive or sunflower oil on your hands.
- Put your hand into the vagina and feel for the piglet or matter causing the blockage and try to remove it.

Clear the piglet's mouth and nose of mucous and if it is not breathing you can slap it to encourage it to breath. Gently rub the piglet dry and put its mouth on a teat.

*\*This unit (9.4) is reproduced from manual for animal health worker, published by FAO of UN*

## Exercise



### 1. What is Parturition? and Phases in parturition. Explain.

Answer:

[illegible]

Notes



Lined area for taking notes, consisting of 30 horizontal lines.

## UNIT9.6: Managing unproductive animals (Reproductive failure)

### Unit Objectives

At the end of this unit, you will be able to:

- Guide farmers on common infertility issues and their handling
- Guide farmers on appropriate feeding of breeding animals
- Guide farmers on maintaining optimum number of animal.

### 9.6.1 Managing unproductive animals (Reproductive failure)

Reproductive failure can be defined as either sterility or infertility. Sterility occurs when there is a permanent problem preventing kid / piglet production, while infertility, or temporary sterility, is the inability to produce live young within a specific time period. There are a number of factors that can cause reproductive failure. This factors can be grouped as infectious and noninfectious factors. Your veterinary supervisor can guide you on diagnosing factors responsible for reproductive failure.

Appropriate feeding and management is the best way to prevent reproductive failure. For majority of reproductive failure cases in small farm animals, culling or slaughter is the most preferred solution.

Infertility due to psychological factors can be addressed to by minimizing any types of stress during the breeding season. Reproductive failure can also be due to plant toxicity. You can look for more information on plants that can cause reproduction failures.

In field conditions you may come across various situations related to reproduction failure such as:

- Delayed puberty / Complete absence of heat or silent heat
- Animals coming to heat every few days but do not become pregnant
- There is abortion (Expelling a fetus before it can live)
- Intersex condition (animal is genetically female but have a mixture of reproductive organs)

Unproductive or less productive animals should be eliminated from farms periodically to save on feeding such animal. This is called culling. Record keeping of individual animal is essential for this.

Notes



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## 10. Employability & Entrepreneurship Skills

Unit 10.1 – Personal Strengths & Value Systems

Unit 10.2 – Digital Literacy: A Recap

Unit 10.3 – Money Matters

Unit 10.4 – Preparing for Employment & Self Employment

Unit 10.5 – Understanding Entrepreneurship

Unit 10.6 – Preparing to be an Entrepreneur



## Key Learning Outcomes



**At the end of this unit, you will be able to:**

1. Explain the meaning of health
2. List common health issues
3. Discuss tips to prevent common health issues
4. Explain the meaning of hygiene
5. Understand the purpose of Swacch Bharat Abhiyan
6. Explain the meaning of habit
7. Discuss ways to set up a safe work environment
8. Discuss critical safety habits to be followed by employees
9. Explain the importance of self-analysis
10. Understand motivation with the help of Maslow's Hierarchy of Needs
11. Discuss the meaning of achievement motivation
12. List the characteristics of entrepreneurs with achievement motivation
13. List the different factors that motivate you
14. Discuss how to maintain a positive attitude
15. Discuss the role of attitude in self-analysis
16. List your strengths and weaknesses
17. Discuss the qualities of honest people
18. Describe the importance of honesty in entrepreneurs
19. Discuss the elements of a strong work ethic
20. Discuss how to foster a good work ethic
21. List the characteristics of highly creative people
22. List the characteristics of highly innovative people
23. Discuss the benefits of time management
24. List the traits of effective time managers
25. Describe effective time management technique
26. Discuss the importance of anger management
27. Describe anger management strategies
28. Discuss tips for anger management
29. Discuss the causes of stress
30. Discuss the symptoms of stress
31. Discuss tips for stress management
32. Identify the basic parts of a computer
33. Identify the basic parts of a keyboard
34. Recall basic computer terminology
35. Recall basic computer terminology

36. Recall the functions of basic computer keys
37. Discuss the main applications of MS Office
38. Discuss the benefits of Microsoft Outlook
39. Discuss the different types of e-commerce
40. List the benefits of e-commerce for retailers and customers
41. Discuss how the Digital India campaign will help boost e-commerce in India
42. Explain how you will sell a product or service on an e-commerce platform
43. Discuss the importance of saving money
44. Discuss the benefits of saving money
45. Discuss the main types of bank accounts
46. Describe the process of opening a bank account
47. Differentiate between fixed and variable costs
48. Describe the main types of investment options
49. Describe the different types of insurance products
50. Describe the different types of taxes
51. Discuss the uses of online banking
52. Discuss the main types of electronic funds transfers
53. Discuss the steps to prepare for an interview
54. Discuss the steps to create an effective Resume
55. Discuss the most frequently asked interview questions
56. Discuss how to answer the most frequently asked interview questions
57. Discuss basic workplace terminology
58. Discuss the concept of entrepreneurship
59. Discuss the importance of entrepreneurship
60. Describe the characteristics of an entrepreneur
61. Describe the different types of enterprises
62. List the qualities of an effective leader
63. Discuss the benefits of effective leadership
64. List the traits of an effective team
65. Discuss the importance of listening effectively
66. Discuss how to listen effectively
67. Discuss the importance of speaking effectively
68. Discuss how to speak effectively
69. Discuss how to solve problems
70. List important problem solving traits

71. Discuss ways to assess problem solving skills
72. Discuss the importance of negotiation
73. Discuss how to negotiate
74. Discuss how to identify new business opportunities
75. Discuss how to identify business opportunities within your business
76. Understand the meaning of entrepreneur
77. Describe the different types of entrepreneurs
78. List the characteristics of entrepreneurs
79. Recall entrepreneur success stories
80. Discuss the entrepreneurial process
81. Describe the entrepreneurship ecosystem
82. Discuss the government's role in the entrepreneurship ecosystem
83. Discuss the current entrepreneurship ecosystem in India
84. Understand the purpose of the Make in India campaign
85. Discuss the relationship between entrepreneurship and risk appetite
86. Discuss the relationship between entrepreneurship and resilience
87. Describe the characteristics of a resilient entrepreneur
88. Discuss how to deal with failure
89. Discuss how market research is carried out
90. Describe the 4 Ps of marketing
91. Discuss the importance of idea generation
92. Recall basic business terminology
93. Discuss the need for CRM
94. Discuss the benefits of CRM
95. Discuss the need for networking
96. Discuss the benefits of networking
97. Understand the importance of setting goals
98. Differentiate between short-term, medium-term and long-term goals
99. Discuss how to write a business plan
100. Explain the financial planning process
101. Discuss ways to manage your risk
102. Describe the procedure and formalities for applying for bank finance
103. Discuss how to manage your own enterprise
104. List important questions that every entrepreneur should ask before starting an enterprise

## UNIT 10.1: Personal Strengths & Value Systems

### Unit Objectives



**At the end of this unit, you will be able to:**

1. Explain the meaning of health
2. List common health issues
3. Discuss tips to prevent common health issues
4. Explain the meaning of hygiene
5. Understand the purpose of Swacch Bharat Abhiyan
6. Explain the meaning of habit
7. Discuss ways to set up a safe work environment
8. Discuss critical safety habits to be followed by employees
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10. Understand motivation with the help of Maslow's Hierarchy of Needs
11. Discuss the meaning of achievement motivation
12. List the characteristics of entrepreneurs with achievement motivation
13. List the different factors that motivate you
14. Discuss how to maintain a positive attitude
15. Discuss the role of attitude in self-analysis
16. List your strengths and weaknesses
17. Discuss the qualities of honest people
18. Describe the importance of honesty in entrepreneurs
19. Discuss the elements of a strong work ethic
20. Discuss how to foster a good work ethic
21. List the characteristics of highly creative people
22. List the characteristics of highly innovative people
23. Discuss the benefits of time management
24. List the traits of effective time managers
25. Describe effective time management technique
26. Discuss the importance of anger management
27. Describe anger management strategies
28. Discuss tips for anger management
29. Discuss the causes of stress
30. Discuss the symptoms of stress
31. Discuss tips for stress management

### 10.1.1 Health, Habits, Hygiene: What is Health

As per the World Health Organization (WHO), health is a “State of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity.” This means being healthy does not simply mean not being unhealthy – it also means you need to be at peace emotionally, and feel fit physically. For example, you cannot say you are healthy simply because you do not have any physical ailments like a cold or cough. You also need to think about whether you are feeling calm, relaxed and happy.

### Common Health Issues

Some common health issues are:

- Allergies
- Asthma
- Skin Disorders
- Depression and Anxiety
- Diabetes
- Cough, Cold, Sore Throat
- Difficulty Sleeping
- Obesity

### Tips to Prevent Health Issues

Taking measures to prevent ill health is always better than curing a disease or sickness. You can stay healthy by:

- Eating healthy foods like fruits, vegetables and nuts
- Cutting back on unhealthy and sugary foods
- Drinking enough water everyday
- Not smoking or drinking alcohol
- Exercising for at least 30 minutes a day, 4-5 times a week
- Taking vaccinations when required
- Practicing yoga exercises and meditation

**How many of these health standards do you follow? Tick the ones that apply to you.**

1. Get minimum 7-8 hours of sleep every night. ☐
2. Avoid checking email first thing in the morning and right before you go to bed at night. ☐
3. Don't skip meals – eat regular meals at correct meal times. ☐
4. Read a little bit every single day. ☐
5. Eat more home cooked food than junk food. ☐

6. Stand more than you sit. ☐
7. Drink a glass of water first thing in the morning and have at least 8 glasses of water through the day. ☐
8. Go to the doctor and dentist for regular checkups. ☐
9. Exercise for 30 minutes at least 5 days a week. ☐
10. Avoid consuming lots of aerated beverages. ☐

## What is Hygiene?

As per the World Health Organization (WHO), “Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases.” In other words, hygiene means ensuring that you do whatever is required to keep your surroundings clean, so that you reduce the chances of spreading germs and diseases.

For instance, think about the kitchen in your home. Good hygiene means ensuring that the kitchen is always spick and span, the food is put away, dishes are washed and dustbins are not overflowing with garbage. Doing all this will reduce the chances of attracting pests like rats or cockroaches, and prevent the growth of fungus and other bacteria, which could spread disease.

**How many of these health standards do you follow? Tick the ones that apply to you.**

1. Have a bath or shower every day with soap – and wash your hair with shampoo 2-3 times a week. ☐
2. Wear a fresh pair of clean undergarments every day. ☐
3. Brush your teeth in the morning and before going to bed. ☐
4. Cut your fingernails and toenails regularly. ☐
5. Wash your hands with soap after going to the toilet. ☐
6. Use an anti-perspirant deodorant on your underarms if you sweat a lot. ☐
7. Wash your hands with soap before cooking or eating. ☐
8. Stay home when you are sick, so other people don't catch what you have. ☐
9. Wash dirty clothes with laundry soap before wearing them again. ☐
10. Cover your nose with a tissue/your hand when coughing or sneezing. ☐

See how healthy and hygienic you are, by giving yourself 1 point for every ticked statement!

Then take a look at what your score means.

### Your Score

0-7/20: You need to work a lot harder to stay fit and fine! Make it a point to practice good habits daily and see how much better you feel!

7-14/20: Not bad, but there is scope for improvement! Try and add a few more good habits to your daily routine.

14-20/20: Great job! Keep up the good work! Your body and mind thank you!

## Swachh Bharat Abhiyan

We have already discussed the importance of following good hygiene and health practices for ourselves. But, it is not enough for us to be healthy and hygienic. We must also extend this standard to our homes, our immediate surroundings and to our country as a whole.

The 'Swachh Bharat Abhiyan' (Clean India Mission) launched by Prime Minister Shri Narendra Modi on 2<sup>nd</sup> October 2014, believes in doing exactly this. The aim of this mission is to clean the streets and roads of India and raise the overall level of cleanliness. Currently this mission covers 4,041 cities and towns across the country. Millions of our people have taken the pledge for a clean India. You should take the pledge too, and do everything possible to keep our country clean!

## What are Habits?

A habit is a behaviour that is repeated frequently. All of us have good habits and bad habits. Keep in mind the phrase by John Dryden: "We first make our habits, and then our habits make us." This is why it is so important that you make good habits a way of life, and consciously avoid practicing bad habits.

Some good habits that you should make part of your daily routine are:

- Always having a positive attitude
- Making exercise a part of your daily routine
- Reading motivational and inspirational stories
- Smiling! Make it a habit to smile as often as possible
- Making time for family and friends
- Going to bed early and waking up early

Some bad habits that you should quit immediately are:

- Skipping breakfast
- Snacking frequently even when you are not hungry
- Eating too much fattening and sugary food
- Smoking, drinking alcohol and doing drugs
- Spending more money than you can afford
- Worrying about unimportant issues
- Staying up late and waking up late

## Tips



- Following healthy and hygienic practices every day will make you feel good mentally and physically.
- Hygiene is two-thirds of health – so good hygiene will help you stay strong and healthy!

### 10.1.2: Safety: Tips to Design a Safe Workplace

Every employer is obligated to ensure that his workplace follows the highest possible safety protocol. When setting up a business, owners must make it a point to:

- Use ergonomically designed furniture and equipment to avoid stooping and twisting
- Provide mechanical aids to avoid lifting or carrying heavy objects
- Have protective equipment on hand for hazardous jobs
- Designate emergency exits and ensure they are easily accessible
- Set down health codes and ensure they are implemented
- Follow the practice of regular safety inspections in and around the workplace
- Ensure regular building inspections are conducted
- Get expert advice on workplace safety and follow it

### Non-Negotiable Employee Safety Habits

Every employer is obligated to ensure that his workplace follows the highest possible safety protocol. When setting up a business, owners must make it a point to:

- Immediately report unsafe conditions to a supervisor
- Recognize and report safety hazards that could lead to slips, trips and falls
- Report all injuries and accidents to a supervisor
- Wear the correct protective equipment when required
- Learn how to correctly use equipment provided for safety purposes
- Be aware of and avoid actions that could endanger other people
- Take rest breaks during the day and some time off from work during the week

### Tips

- Be aware of what emergency number to call at the time of a workplace emergency
- Practice evacuation drills regularly to avoid chaotic evacuations

### 10.1.3 Self Analysis – Attitude, Achievement Motivation: What is Self-Analysis

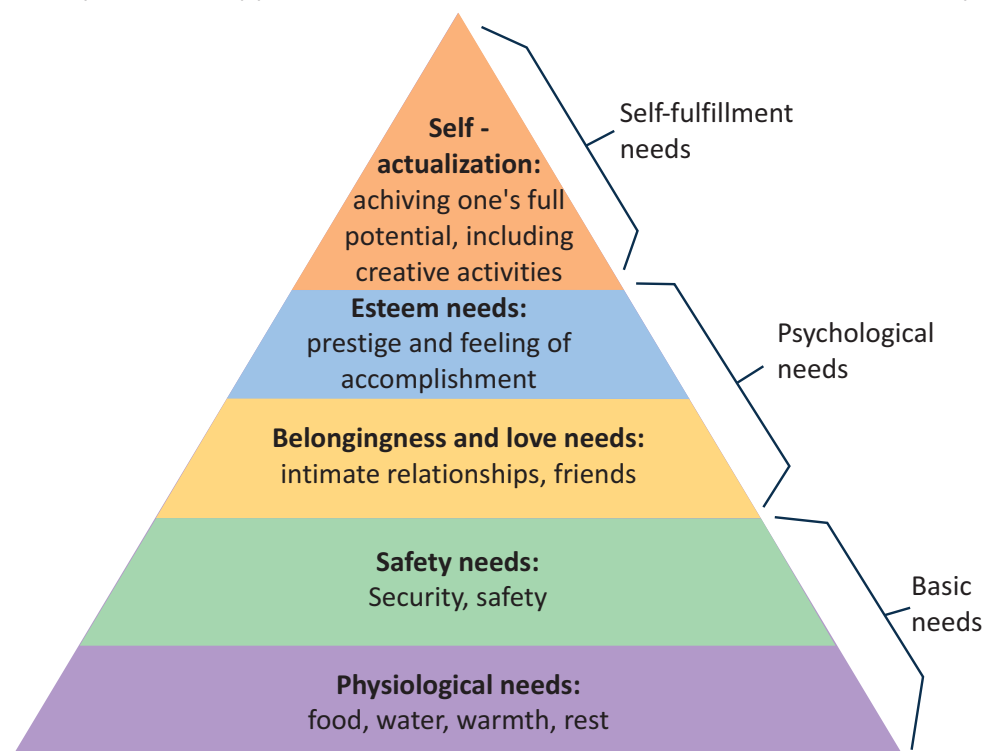
To truly achieve your full potential, you need to take a deep look inside yourself and find out what kind of person you really are. This attempt to understand your personality is known as self-analysis. Assessing yourself in this manner will help you grow, and will also help you to identify areas within yourself that need to be further developed, changed or eliminated. You can better understand yourself by taking a deep look at what motivates you, what your attitude is like, and what your strengths and weaknesses are.

### What is Motivation?

Very simply put, motivation is your reason for acting or behaving in a certain manner. It is important to understand that not everyone is motivated by the same desires – people are motivated by many, many different things. We can understand this better by looking at Maslow's Hierarchy of Needs.

### Maslow's Hierarchy of Needs

Famous American psychologist Abraham Maslow wanted to understand what motivates people. He believed that people have five types of needs, ranging from very basic needs (called physiological needs) to more important needs that are required for self-growth (called self-actualization needs). Between the physiological and self-actualization needs are three other needs – safety needs, belongingness and love needs, and esteem needs. These needs are usually shown as a pyramid with five levels and are known as Maslow's Hierarchy of Needs.



As you can see from the pyramid, the lowest level depicts the most basic needs. Maslow believed that our behaviour is motivated by our basic needs, until those needs are met. Once they are fulfilled, we move to the next level and are motivated by the next level of needs. Let's understand this better with an example.

Rupa comes from a very poor family. She never has enough food, water, warmth or rest. According to Maslow, until Rupa is sure that she will get these basic needs, she will not even think about the next level of needs – her safety needs. But, once Rupa is confident that her basic needs will be met, she will move to the next level, and her behaviour will then be motivated by her need for security and safety. Once these new needs are met, Rupa will once again move to the next level, and be motivated by her need for relationships and friends. Once this need is satisfied, Rupa will then focus on the fourth level of needs – her esteem needs, after which she will move up to the fifth and last level of needs – the desire to achieve her full potential.

## Understanding Achievement Motivation

We now know that people are motivated by basic, psychological and self-fulfillment needs. However, certain people are also motivated by the achievement of highly challenging accomplishments. This is known as Achievement Motivation, or 'need for achievement'.

The level of motivation achievement in a person differs from individual to individual. It is important that entrepreneurs have a high level of achievement motivation – a deep desire to accomplish something important and unique. It is equally important that they hire people who are also highly motivated by challenges and success.

## What Motivates You?

What are the things that really motivate you? List down five things that really motivate you. Remember to answer honestly!

**I am motivated by:**

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## Characteristics of Entrepreneurs with Achievement Motivation

Entrepreneurs with achievement motivation can be described as follows:

- Unafraid to take risks for personal accomplishment
- Love being challenged
- Future-oriented
- Flexible and adaptive
- Value negative feedback more than positive feedback
- Very persistent when it comes to achieving goals
- Extremely courageous
- Highly creative and innovative
- Restless - constantly looking to achieve more
- Feel personally responsible for solving problems

**Think about it:**

- How many of these traits do you have?
- Can you think of entrepreneurs who display these traits?

## How to Cultivate a Positive Attitude

The good news is attitude is a choice. So it is possible to improve, control and change our attitude, if we decide we want to! The following tips help foster a positive mindset:

- Remember that you control your attitude, not the other way around
- Devote at least 15 minutes a day towards reading, watching or listening to something positive
- Avoid negative people who only complain and stop complaining yourself
- Expand your vocabulary with positive words and delete negative phrases from your mind
- Be appreciative and focus on what's good in yourself, in your life, and in others
- Stop thinking of yourself as a victim and start being proactive
- Imagine yourself succeeding and achieving your goals

## What is Attitude?

Now that we understand why motivation is so important for self-analysis, let's look at the role our attitude plays in better understanding ourselves. Attitude can be described as your tendency (positive or negative), to think and feel about someone or something. Attitude is the foundation for success in every aspect of life. Our attitude can be our best friend or our worst enemy. In other words:

*"The only disability in life is a bad attitude."*

When you start a business, you are sure to encounter a wide variety of emotions, from difficult times and failures to good times and successes. Your attitude is what will see you through the tough times and guide you towards success. Attitude is also infectious. It affects everyone around you, from your customers to your employees to your investors. A positive attitude helps build confidence in the workplace while a negative attitude is likely to result in the demotivation of your people.

## What Are Your Strengths and Weaknesses?

Another way to analyze yourself is by honestly identifying your strengths and weaknesses. This will help you use your strengths to your best advantage and reduce your weaknesses.

Note down all your strengths and weaknesses in the two columns below. Remember to be honest with yourself!

Strengths	Weaknesses

### Tips



- Achievement motivation can be learned.
- Don't be afraid to make mistakes.
- Train yourself to finish what you start.
- Dream big.

### 10.1.4 Honesty & Work Ethics: What is Honesty?

Honesty is the quality of being fair and truthful. It means speaking and acting in a manner that inspires trust. A person who is described as honest is seen as truthful and sincere, and as someone who isn't deceitful or devious and doesn't steal or cheat. There are two dimensions of honesty – one is honesty in communication and the other is honesty in conduct.

Honesty is an extremely important trait because it results in peace of mind and builds relationships that are based on trust. Being dishonest, on the other hand, results in anxiety and leads to relationships full of distrust and conflict.

### Qualities of Honest People

Honest individuals have certain distinct characteristics. Some common qualities among honest people are:

1. They don't worry about what others think of them. They believe in being themselves – they don't bother about whether they are liked or disliked for their personalities.
2. They stand up for their beliefs. They won't think twice about giving their honest opinion, even if they are aware that their point of view lies with the minority.
3. They are thick-skinned. This means they are not affected by others judging them harshly for their honest opinions.
4. They forge trusting, meaningful and healthy friendships. Honest people usually surround themselves with honest friends. They have faith that their friends will be truthful and upfront with them at all times.

They are trusted by their peers. They are seen as people who can be counted on for truthful and objective feedback and advice.

- Honesty and employees: When entrepreneurs build honest relationships with their employees, it leads to more transparency in the workplace, which results in higher work performance and better results.
- Honesty and investors: For entrepreneurs, being honest with investors means not only sharing strengths but also candidly disclosing current and potential weaknesses, problem areas and solution strategies. Keep in mind that investors have a lot of experience with startups and are aware that all new companies have problems. Claiming that everything is perfectly fine and running smoothly is a red flag for most investors.
- Honesty with oneself: The consequences of being dishonest with oneself can lead to dire results, especially in the case of entrepreneurs. For entrepreneurs to succeed, it is critical that they remain realistic about their situation at all times, and accurately judge every aspect of their enterprise for what it truly is.

### Importance of Honesty in Entrepreneurs

One of the most important characteristics of entrepreneurs is honesty. When entrepreneurs are honest with their customers, employees and investors, it shows that they respect those that they work with. It is also important that entrepreneurs remain honest with themselves. Let's look at how being honest would lead to great benefits for entrepreneurs.

- Honesty and customers: When entrepreneurs are honest with their customers it leads to stronger relationships, which in turn results in business growth and a stronger customer network.

## What are Work Ethics?

Being ethical in the workplace means displaying values like honesty, integrity and respect in all your decisions and communications. It means not displaying negative qualities like lying, cheating and stealing.

Workplace ethics play a big role in the profitability of a company. It is as crucial to an enterprise as high morale and teamwork. This is why most companies lay down specific workplace ethic guidelines that must compulsorily be followed by their employees. These guidelines are typically outlined in a company's employee handbook.

## Elements of a Strong Work Ethic

An entrepreneur must display strong work ethics, as well as hire only those individuals who believe in and display the same level of ethical behavior in the workplace. Some elements of a strong work ethic are:

- **Professionalism:** This involves everything from how you present yourself in a corporate setting to the manner in which you treat others in the workplace.
- **Respectfulness:** This means remaining poised and diplomatic regardless of how stressful or volatile a situation is.
- **Dependability:** This means always keeping your word, whether it's arriving on time for a meeting or delivering work on time.
- **Dedication:** This means refusing to quit until the designated work is done, and completing the work at the highest possible level of excellence.
- **Determination:** This means embracing obstacles as challenges rather than letting them stop you, and pushing ahead with purpose and resilience to get the desired results.
- **Accountability:** This means taking responsibility for your actions and the consequences of your actions, and not making excuses for your mistakes.
- **Humility:** This means acknowledging everyone's efforts and hard work, and sharing the credit for accomplishments.

## How to Foster a Good Work Ethic

As an entrepreneur, it is important that you clearly define the kind of behaviour that you expect from each and every team member in the workplace. You should make it clear that you expect employees to display positive work ethics like:

- **Honesty:** All work assigned to a person should be done with complete honesty, without any deceit or lies.
- **Good attitude:** All team members should be optimistic, energetic, and positive.
- **Reliability:** Employees should show up where they are supposed to be, when they are supposed to be there.
- **Good work habits:** Employees should always be well groomed, never use inappropriate language, conduct themselves professionally at all times, etc.
- **Initiative:** Doing the bare minimum is not enough. Every team member needs to be proactive and show initiative.
- **Trustworthiness:** Trust is non-negotiable. If an employee cannot be trusted, it's time to let that employee go.

- **Respect:** Employees need to respect the company, the law, their work, their colleagues and themselves.
- **Integrity:** Each and every team member should be completely ethical and must display above board behaviour at all times.
- **Efficiency:** Efficient employees help a company grow while inefficient employees result in a waste of time and resources.

## Tips



- Don't get angry when someone tells you the truth and you don't like what you hear.
- Always be willing to accept responsibility for your mistakes.

### 10.1.5 Creativity & Innovation : What is Creativity

Creativity means thinking outside the box. It means viewing things in new ways or from different perspectives, and then converting these ideas into reality. Creativity involves two parts: thinking and producing. Simply having an idea makes you imaginative, not creative. However, having an idea and acting on it makes you creative.

### Characteristics of Highly Creative People

Some characteristics of creative people are:

- They are imaginative and playful
- They see issues from different angles
- They notice small details
- They have very little tolerance for boredom
- They detest rules and routine
- They love to daydream
- They are very curious

### What is Innovation?

There are many different definitions of innovation. In simple terms, innovation means turning an idea into a solution that adds value. It can also mean adding value by implementing a new product, service or process, or significantly improving on an existing product, service or process.

### Characteristics of Highly Innovative People

Some characteristics of highly innovative people are:

- They embrace doing things differently
- They don't believe in taking shortcuts
- They are not afraid to be unconventional
- They are highly proactive and persistent
- They are organized, cautious and risk-averse

### Tips



- Take regular breaks from your creative work to recharge yourself and gain fresh perspective.
- Build prototypes frequently, test them out, get feedback, and make the required changes.

### 10.1.6 Time Management: What is Time Management?

Time management is the process organizing your time, and deciding how to allocate your time between different activities. Good time management is the difference between working smart (getting more done in less time) and working hard (working for more time to get more done).

Effective time management leads to an efficient work output, even when you are faced with tight deadlines and high pressure situations. On the other hand, not managing your time effectively results in inefficient output and increases stress and anxiety.

### Benefits of Time Management

Time management can lead to huge benefits like:

- Greater productivity
- Better professional reputation
- Higher chances for career advancement
- Higher efficiency
- Reduced stress
- Greater opportunities to achieve goals

Not managing time effectively can result in undesirable consequences like:

- Missing deadlines
- Substandard work quality
- Stalled career
- Inefficient work output
- Poor professional reputation
- Increase in stress and anxiety

### Traits of Effective Time Managers

Some traits of effective time managers are:

- They begin projects early
- They set daily objectives
- They modify plans if required, to achieve better results
- They are flexible and open-minded
- They inform people in advance if their help will be required
- They know how to say no
- They break tasks into steps with specific deadlines
- They continually review long term goals
- They think of alternate solutions if and when required
- They ask for help when required
- They create backup plans

### Effective Time Management Techniques

You can manage your time better by putting into practice certain time management techniques. Some helpful tips are:

- Plan out your day as well as plan for interruptions. Give yourself at least 30 minutes to figure out your time plan. In your plan, schedule some time for interruptions.
- Put up a “Do Not Disturb” sign when you absolutely have to complete a certain amount of work.
- Close your mind to all distractions. Train yourself to ignore ringing phones, don’t reply to chat messages and disconnect from social media sites.

- Delegate your work. This will not only help your work get done faster, but will also show you the unique skills and abilities of those around you.
- Stop procrastinating. Remind yourself that procrastination typically arises due to the fear of failure or the belief that you cannot do things as perfectly as you wish to do them.
- Prioritize. List each task to be completed in order of its urgency or importance level. Then focus on completing each task, one by one.
- Maintain a log of your work activities. Analyze the log to help you understand how efficient you are, and how much time is wasted every day.  
Create time management goals to reduce time wastage.

## Tips



- Always complete the most important tasks first.
- Get at least 7 – 8 hours of sleep every day.
- Start your day early.
- Don't waste too much time on small, unimportant details.
- Set a time limit for every task that you will undertake.
- Give yourself some time to unwind between tasks.

### 10.1.7 Anger Management: What is Anger Management

Anger management is the process of:

1. Learning to recognize the signs that you, or someone else, is becoming angry
2. Taking the best course of action to calm down the situation in a positive way

Anger management does not mean suppressing anger.

### Importance of Anger Management

Anger is a perfectly normal human emotion. In fact, when managed the right way, anger can be considered a healthy emotion. However, if it is not kept in check, anger can make us act inappropriately and can lead to us saying or doing things that we will likely later regret.

Extreme anger can:

- **Hurt you physically:** It leads to heart disease, diabetes, a weakened immune system, insomnia, and high blood pressure.
- **Hurt you mentally:** It can cloud your thinking and lead to stress, depression and mental health issues.
- **Hurt your career:** It can result in alienating your colleagues, bosses, clients and lead to the loss of respect.
- **Hurt your relationships:** It makes it hard for your family and friends to trust you, be honest with you and feel comfortable around you.

This is why anger management, or managing anger appropriately, is so important.

### Anger Management Strategies

Here are some strategies that can help you control your anger:

#### Strategy 1: Relaxation

Something as simple as breathing deeply and looking at relaxing images works wonders in calming down angry feelings. Try this simple breathing exercise:

1. Take a deep breath from your diaphragm (don't breathe from your chest)
2. Visualize your breath coming up from your stomach
3. Keep repeating a calming word like 'relax' or 'take it easy' (remember to keep breathing deeply while repeating the word)
4. Picture a relaxing moment (this can be from your memory or your imagination)

Follow this relaxation technique daily, especially when you realize that you're starting to feel angry.

#### Strategy 2: Cognitive Restructuring

Cognitive restructuring means changing the manner in which you think. Anger can make you curse, swear, exaggerate and act very dramatically. When this happens, force yourself to replace your angry thoughts with more logical ones. For instance, instead of thinking 'Everything is ruined' change your mindset and tell yourself 'It's not the end of the world and getting angry won't solve this'.

**Strategy 3: Problem Solving**

Getting angry about a problem that you cannot control is a perfectly natural response. Sometimes, try as you may, there may not be a solution to the difficulty you are faced with. In such cases, stop focusing on solving the problem, and instead focus on handling and facing the problem. Remind yourself that you will do your best to deal with the situation, but that you will not blame yourself if you don't get the solution you desire.

**Strategy 4: Better Communication**

When you're angry, it is very easy to jump to inaccurate conclusions. In this case, you need to force yourself to stop reacting, and think carefully about what you want to say, before saying it. Avoid saying the first thing that enters your head. Force yourself to listen carefully to what the other person is saying. Then think about the conversation before responding.

**Strategy 5: Changing Your Environment**

If you find that your environment is the cause of your anger, try and give yourself a break from your surroundings. Make an active decision to schedule some personal time for yourself, especially on days that are very hectic and stressful. Having even a brief amount of quiet or alone time is sure to help calm you down.

**Tips for Anger Management**

- The following tips will help you keep your anger in check:
- Take some time to collect your thoughts before you speak out in anger.
- Express the reason for your anger in an assertive, but non-confrontational manner once you have calmed down.
- Do some form of physical exercise like running or walking briskly when you feel yourself getting angry.
- Make short breaks part of your daily routine, especially during days that are stressful. Focus on how to solve a problem that's making you angry, rather than focusing on the fact that the problem is making you angry.

**Tips**

- Try to forgive those who anger you, rather than hold a grudge against them.
- Avoid using sarcasm and hurling insults. Instead, try and explain the reason for your frustration in a polite and mature manner.

### 10.1.8 Stress Management: What is Stress

We say we are 'stressed' when we feel overloaded and unsure of our ability to deal with the pressures placed on us. Anything that challenges or threatens our well-being can be defined as a stress. It is important to note that stress can be good and bad. While good stress keeps us going, negative stress undermines our mental and physical health. This is why it is so important to manage negative stress effectively.

### Causes of Stress

Stress can be caused by internal and external factors.

#### Internal causes of stress

- Constant worry
- Rigid thinking
- Unrealistic expectations
- Pessimism
- Negative self-talk
- All in or all out attitude

#### External causes of stress

- Major life changes
- Difficulties with relationships
- Having too much to do
- Difficulties at work or in school
- Financial difficulties
- Worrying about one's children and/or family

### Symptoms of Stress

Stress can manifest itself in numerous ways. Take a look at the cognitive, emotional, physical and behavioral symptoms of stress.

Cognitive Symptoms	Emotional Symptoms
<ul style="list-style-type: none"> <li>Memory problems</li> <li>Concentration issues</li> <li>Lack of judgement</li> <li>Pessimism</li> <li>Anxiety</li> <li>Constant worrying</li> </ul>	<ul style="list-style-type: none"> <li>Depression</li> <li>Agitation</li> <li>Irritability</li> <li>Loneliness</li> <li>Anxiety</li> <li>Anger</li> </ul>
Physical Symptoms	Behavioral Symptoms
<ul style="list-style-type: none"> <li>Aches and pain</li> <li>Diarrhea or constipation</li> <li>Nausea</li> <li>Dizziness</li> <li>Chest pain and/or rapid heartbeat</li> <li>Frequent cold or flu like feelings</li> </ul>	<ul style="list-style-type: none"> <li>Increase or decrease in appetite</li> <li>Over sleeping or not sleeping enough</li> <li>Withdrawing socially</li> <li>Ignoring responsibilities</li> <li>Consumption of alcohol or cigarettes</li> <li>Nervous habits like nail biting, pacing etc.</li> </ul>

## Tips to Manage Stress

The following tips can help you manage your stress better:

- Note down the different ways in which you can handle the various sources of your stress.
- Remember that you cannot control everything, but you can control how you respond.
- Discuss your feelings, opinions and beliefs rather than reacting angrily, defensively or passively.
- Practice relaxation techniques like meditation, yoga or tai chi when you start feeling stressed.
- Devote a part of your day towards exercise.
- Eat healthy foods like fruits and vegetables. Avoid unhealthy foods especially those containing large amounts of sugar.
- Plan your day so that you can manage your time better, with less stress.
- Say no to people and things when required.
- Schedule time to pursue your hobbies and interests.
- Ensure you get at least 7-8 hours of sleep.
- Reduce your caffeine intake.
- Increase the time spent with family and friends.

## Tips



- Force yourself to smile even if you feel stressed. Smiling makes us feel relaxed and happy.
- Stop yourself from feeling and thinking like a victim. Change your attitude and focus on being proactive.

## UNIT 10.2. Digital Literacy: A Recap

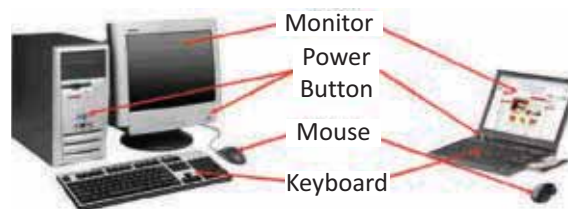
### Unit Objectives



**At the end of this unit, you will be able to:**

1. Identify the basic parts of a computer
2. Identify the basic parts of a keyboard
3. Recall basic computer terminology
4. Recall basic computer terminology
5. Recall the functions of basic computer keys
6. Discuss the main applications of MS Office
7. Discuss the benefits of Microsoft Outlook
8. Discuss the different types of e-commerce
9. List the benefits of e-commerce for retailers and customers
10. Discuss how the Digital India campaign will help boost e-commerce in India
11. Describe how you will sell a product or service on an e-commerce platform

### 10.2.1 Computer and Internet basics: Basic Parts of a Computer



### Basic Parts of a Keyboard



## Basic Parts of a Computer

- **Central Processing Unit (CPU):** The brain of the computer. It interprets and carries out program instructions.
- **Hard Drive:** A device that stores large amounts of data.
- **Monitor:** The device that contains the computer screen where the information is visually displayed.
- **Desktop:** The first screen displayed after the operating system loads.
- **Background:** The image that fills the background of the desktop.

## Basic Parts of a Computer

- **Mouse:** A hand-held device used to point to items on the monitor.
- **Speakers:** Devices that enable you to hear sound from the computer.
- **Printer:** A device that converts output from a computer into printed paper documents.
- **Icon:** A small picture or image that visually represents something on your computer.
- **Cursor:** An arrow which indicates where you are positioned on the screen.
- **Program Menu:** A list of programs on your computer that can be accessed from the Start menu.
- **Taskbar:** The horizontal bar at the bottom of the computer screen that lists applications that are currently in use.
- **Recycle Bin:** A temporary storage for deleted files.

## Basic Internet Terms

- **The Internet:** A vast, international collection of computer networks that transfer information.
- **The World Wide Web:** A system that lets you access information on the Internet.
- **Website:** A location on the World Wide Web (and Internet) that contains information about a specific topic.
- **Homepage:** Provides information about a website and directs you to other pages on that website.
- **Link/Hyperlink:** A highlighted or underlined icon, graphic, or text that takes you to another file or object.
- **Web Address/URL:** The address for a website.
- **Address Box:** A box in the browser window where you can type in a web address.

## Basic Computer Keys

- **Arrow Keys:** Press these keys to move your cursor.
- **Space bar:** Adds a space.
- **Enter/Return:** Moves your cursor to a new line.
- **Shift:** Press this key if you want to type a capital letter or the upper symbol of a key.
- **Caps Lock:** Press this key if you want all the letters you type to be capital letters. Press it again to revert back to typing lowercase letters.
- **Backspace:** Deletes everything to the left of your cursor.

## Tips



- When visiting a .com address, there no need to type http:// or even www. Just type the name of the website and then press Ctrl + Enter. (Example: Type 'apple' and press Ctrl + Enter to go to [www.apple.com](http://www.apple.com)).
- Press the Ctrl key and press the + or - to increase and decrease the size of text.
- Press F5 or Ctrl + R to refresh or reload a web page.

## 10.2.2 MS Office and Email: About MS Office

MS Office or Microsoft Office is a suite of computer programs developed by Microsoft. Although meant for all users, it offers different versions that cater specifically to students, home users and business users. All the programs are compatible with both, Windows and Macintosh.

### Most Popular Office Products

Some of the most popular and universally used MS Office applications are:

- **Microsoft Word:** Allows users to type text and add images to a document.
- **Microsoft Excel:** Allows users to enter data into a spreadsheet and create calculations and graphs.
- **Microsoft PowerPoint:** Allows users to add text, pictures and media and create slideshows and presentations.
- **Microsoft Outlook:** Allows users to send and receive email.
- **Microsoft OneNote:** Allows users to make drawings and notes with the feel of a pen on paper.
- **Microsoft Access:** Allows users to store data over many tables.

### Why Choose Microsoft Outlook

A popular email management choice especially in the workplace, Microsoft Outlook also includes an address book, notebook, web browser and calendar. Some major benefits of this program are:

- **Integrated search function:** You can use keywords to search for data across all Outlook programs.
- **Enhanced security:** Your email is safe from hackers, junk mail and phishing website email.
- **Email syncing:** Sync your mail with your calendar, contact list, notes in One Note and...your phone!
- **Offline access to email:** No Internet? No problem! Write emails offline and send them when you're connected again.

### Tips



- Press Ctrl+R as a shortcut method to reply to email.
- Set your desktop notifications only for very important emails.
- Flag messages quickly by selecting messages and hitting the Insert key.
- Save frequently sent emails as a template to reuse again and again.
- Conveniently save important emails as files.

### 10.2.3 E-Commerce: What is E-Commerce

E-commerce is the buying or selling of goods and services, or the transmitting of money or data, electronically on the internet. E-Commerce is the short form for “electronic commerce.”

### Examples of E-Commerce

Some examples of e-commerce are:

- Online shopping
- Online auctions
- Online ticketing
- Electronic payments
- Internet banking

### Types of E-Commerce

E-commerce can be classified based on the types of participants in the transaction. The main types of e-commerce are:

- **Business to Business (B2B):** Both the transacting parties are businesses.
- **Business to Consumer (B2C):** Businesses sell electronically to end-consumers.
- **Consumer to Consumer (C2C):** Consumers come together to buy, sell or trade items to other consumers.
- **Consumer-to-Business (C2B):** Consumers make products or services available for purchase to companies looking for exactly those services or products.
- **Business-to-Administration (B2A):** Online transactions conducted between companies and public administration.
- **Consumer-to-Administration (C2A):** Online transactions conducted between individuals and public administration.

### Benefits of E-Commerce

The e-commerce business provides some benefits for retailers and customers.

#### Benefits for retailers:

- Establishes an online presence
- Reduces operational costs by removing overhead costs
- Increases brand awareness through the use of good keywords
- Increases sales by removing geographical and time constraints

#### Benefits for customers:

- Offers a wider range of choice than any physical store
- Enables goods and services to be purchased from remote locations
- Enables consumers to perform price comparisons

## Digital India Campaign

Prime Minister Narendra Modi launched the Digital India campaign in 2015, with the objective of offering every citizen of India access to digital services, knowledge and information. The campaign aims to improve the country's online infrastructure and increase internet connectivity, thus boosting the e-commerce industry.

Currently, the majority of online transactions come from tier 2 and tier 3 cities. Once the Digital India campaign is in place, the government will deliver services through mobile connectivity, which will help deliver internet to remote corners of the country. This will help the e-commerce market to enter India's tier 4 towns and rural areas.

## E-Commerce Activity

Choose a product or service that you want to sell online. Write a brief note explaining how you will use existing e-commerce platforms, or create a new e-commerce platform, to sell your product or service.

### Tips



- Before launching your e-commerce platform, test everything.
- Pay close and personal attention to your social media.

## UNIT 10.3: Money Matters

### Unit Objectives



At the end of this unit, you will be able to:

1. Discuss the importance of saving money
2. Discuss the benefits of saving money
3. Discuss the main types of bank accounts
4. Describe the process of opening a bank account
5. Differentiate between fixed and variable costs
6. Describe the main types of investment options
7. Describe the different types of insurance products
8. Describe the different types of taxes
9. Discuss the uses of online banking
10. Discuss the main types of electronic funds transfers

### 10.3.1 Personal Finance – Why to Save: Importance of Saving

We all know that the future is unpredictable. You never know what will happen tomorrow, next week or next year. That's why saving money steadily through the years is so important. Saving money will help improve your financial situation over time. But more importantly, knowing that you have money stashed away for an emergency will give you peace of mind. Saving money also opens the door to many more options and possibilities.

### Benefits of Saving

Inculcating the habit of saving leads to a vast number of benefits. Saving helps you:

- **Become financially independent:** When you have enough money saved up to feel secure you can start making your choices, from taking a vacation whenever you want, to switching careers or starting your own business.
- **Invest in yourself through education:** Through saving, you can earn enough to pay up for courses that will add to your professional experience and ultimately result in higher paying jobs.
- **Get out of debt:** Once you have saved enough as a reserve fund, you can use your savings to pay off debts like loans or bills that have accumulated over time.
- **Be prepared for surprise expenses :** Having money saved enables you to pay for unforeseen expenses like sudden car or house repairs, without feeling financially stressed.
- **Pay for emergencies:** Saving helps you deal with emergencies like sudden health issues or emergency trips without feeling financially burdened.

- **Afford large purchases and achieve major goals:** Saving diligently makes it possible to place down payments towards major purchases and goals, like buying a home or a car.
- **Retire:** The money you have saved over the years will keep you comfortable when you no longer have the income you would get from your job.

## Tips



- Break your spending habit. Try not spending on one expensive item per week, and put the money that you would have spent into your savings.
- Decide that you will not buy anything on certain days or weeks and stick to your word.

## 10.3.2 Types of Bank Accounts, Opening a Bank Account: Types of Bank Accounts

In India, banks offer four main types of bank accounts. These are:

- Current Accounts
- Savings Accounts
- Recurring Deposit Accounts
- Fixed Deposit Accounts

### **Current Accounts**

Current accounts offer the most liquid deposits and thus, are best suited for businessmen and companies. As these accounts are not meant for investments and savings, there is no imposed limit on the number or amount of transactions that can be made on any given day. Current account holders are not paid any interest on the amounts held in their accounts. They are charged for certain services offered on such accounts.

### **Savings Accounts**

Savings accounts are meant to promote savings, and are therefore the number one choice for salaried individuals, pensioners and students. While there is no restriction on the number and amount of deposits made, there are usually restrictions on the number and amount of withdrawals. Savings account holders are paid interest on their savings.

### **Recurring Deposit Accounts**

Recurring Deposit accounts, also called RD accounts, are the accounts of choice for those who want to save an amount every month, but are unable to invest a large sum at one time. Such account holders deposit a small, fixed amount every month for a pre-determined period (minimum 6 months). Defaulting on a monthly payment results in the account holder being charged a penalty amount. The total amount is repaid with interest at the end of the specified period.

### **Fixed Deposit Accounts**

Fixed Deposit accounts, also called FD accounts, are ideal for those who wish to deposit their savings for a long term in return for a high rate of interest. The rate of interest offered depends on the amount deposited and the time period, and also differs from bank to bank. In the case of an FD, a certain amount of money is deposited by the account holder for a fixed period of time. The money can be withdrawn when the period expires. If necessary, the depositor can break the fixed deposit prematurely. However, this usually attracts a penalty amount which also differs from bank to bank.

## Opening a Bank Account

Opening a bank account is quite a simple process. Take a look at the steps to open an account of your own:

### **Step 1: Fill in the Account Opening Form**

This form requires you to provide the following information:

- Personal details (name, address, phone number, date of birth, gender, occupation, address)
- Method of receiving your account statement (hard copy/email)
- Details of your initial deposit (cash/cheque)
- Manner of operating your account (online/mobile banking/traditional via cheque, slip books)

Ensure that you sign wherever required on the form.

**Step 2: Affix your Photograph**

Stick a recent photograph of yourself in the allotted space on the form.

**Step 3: Provide your Know Your Customer (KYC) Details**

KYC is a process that helps banks verify the identity and address of their customers. To open an account, every individual needs to submit certain approved documents with respect to photo identity (ID) and address proof. Some Officially Valid Documents (OVDs) are:

- Passport
- Driving License
- Voters' Identity Card
- PAN Card
- UIDAI (Aadhaar) Card

**Step 4: Submit All your Documents**

Submit the completed Account Opening Form and KYC documents. Then wait until the forms are processed and your account has been opened!

**Tips**

- Select the right type of account.
- Fill in complete nomination details.
- Ask about fees.
- Understand the rules.
- Check for online banking – it's convenient!
- Keep an eye on your bank balance.

### 10.3.3 Costs: Fixed vs Variable: What are Fixed and Variable Costs

Fixed costs and variable costs together make up a company's total cost. These are the two types of costs that companies have to bear when producing goods and services.

A fixed cost does not change with the volume of goods or services a company produces. It always remains the same.

A variable cost, on the other hand, increases and decreases depending on the volume of goods and services produced. In other words, it varies with the amount produced.

### Differences Between Fixed and Variable Costs

Let's take a look at some of the main differences between fixed and variable costs:

Criteria	Fixed Costs	Variable Costs
Meaning	A cost that stays the same, regardless of the output produced.	A cost that changes when the
Nature	Time related.	Volume related.
Incurred	Incurred irrespective of units being produced.	Incurred only when units are produced.
Unit cost	Inversely proportional to the number of units produced.	Remains the same, per unit.
Examples	Depreciation, rent, salary, insurance, tax etc.	Material consumed, wages, commission on sales, packing expenses, etc.

### Tips



- When trying to determine whether a cost is fixed or variable, simply ask the following question: Will the particular cost change if the company stopped its production activities? If the answer is no, then it is a fixed cost. If the answer is yes, then it is probably a variable cost.

### 10.3.4 Investment, Insurance and Taxes:

#### Investment

Investment means that money is spent today with the aim of reaping financial gains at a future time. The main types of investment options are as follows:

- **Bonds:** Bonds are instruments used by public and private companies to raise large sums of money – too large to be borrowed from a bank. These bonds are then issued in the public market and are bought by lenders.
- **Stocks:** Stocks or equity are shares that are issued by companies and are bought by the general public.
- **Small Savings Schemes:** Small Savings Schemes are tools meant to save money in small amounts. Some popular schemes are the Employees Provident Fund, Sukanya Samridhi Scheme and National Pension Scheme.
- **Mutual Funds:** Mutual Funds are professionally managed financial instruments that invest money in different securities on behalf of investors.
- **Fixed Deposits:** A fixed amount of money is kept aside with a financial institution for a fixed amount of time in return for interest on the money.
- **Real Estate:** Loans are taken from banks to purchase real estate, which is then leased or sold with the aim of making a profit on the appreciated property price.
- **Hedge Funds:** Hedge funds invest in both financial derivatives and/or publicly traded securities.
- **Private Equity:** Private Equity is trading in the shares of an operating company that is not publicly listed and whose shares are not available on the stock market.
- **Venture Capital:** Venture Capital involves investing substantial capital in a budding company in return for stocks in that company.

#### Insurance

There are two types of insurance – Life Insurance and Non-Life or General Insurance.

##### Life Insurance

Life Insurance deals with all insurance covering human life.

##### Life Insurance Products

The main life insurance products are:

- **Term Insurance:** This is the simplest and cheapest form of insurance. It offers financial protection for a specified tenure, say 15 to 20 years. In the case of your death, your family is paid the sum assured. In the case of your surviving the term, the insurer pays nothing.
- **Endowment Policy:** This offers the dual benefit of insurance and investment. Part of the premium is allocated towards the sum assured, while the remaining premium gets invested in equity and debt. It pays a lump sum amount after the specified duration or on the death of the policyholder, whichever is earlier.
- **Unit-Linked Insurance Plan (ULIP):** Here part of the premium is spent on the life cover, while the remaining amount is invested in equity and debt. It helps develop a regular saving habit.

- **Money Back Life Insurance:** While the policyholder is alive, periodic payments of the partial survival benefits are made during the policy tenure. On the death of the insured, the insurance company pays the full sum assured along with survival benefits.
- **Whole Life Insurance:** It offers the dual benefit of insurance and investment. It offers insurance cover for the whole life of the person or up to 100 years whichever is earlier.

### General Insurance

General Insurance deals with all insurance covering assets like animals, agricultural crops, goods, factories, cars and so on.

### General Insurance Products

The main general insurance products are:

- **Motor Insurance:** This can be divided into Four Wheeler Insurance and Two Wheeler Insurance.
- **Health Insurance:** The main types of health insurance are individual health insurance, family floater health insurance, comprehensive health insurance and critical illness insurance.
- **Travel Insurance:** This can be categorised into Individual Travel Policy, Family Travel Policy, Student Travel Insurance and Senior Citizen Health Insurance.
- **Home Insurance:** This protects the house and its contents from risk.
- **Marine Insurance:** This insurance covers goods, freight, cargo etc. against loss or damage during transit by rail, road, sea and/or air.

## Taxes

There are two types of taxes – Direct Taxes and Indirect Taxes.

### Direct Tax

Direct taxes are levied directly on an entity or a person and are non-transferrable.

Some examples of Direct Taxes are:

- **Income Tax:** This tax is levied on your earning in a financial year. It is applicable to both, individuals and companies.
- **Capital Gains Tax:** This tax is payable whenever you receive a sizable amount of money. It is usually of two types – short term capital gains from investments held for less than 36 months and long term capital gains from investments held for longer than 36 months.
- **Securities Transaction Tax:** This tax is added to the price of a share. It is levied every time you buy or sell shares.
- **Perquisite Tax:** This tax is levied on perks that have been acquired by a company or used by an employee.
- **Corporate Tax:** Corporate tax is paid by companies from the revenue they earn.

### Indirect Tax

Indirect taxes are levied on goods or services.

Some examples of Indirect Taxes are:

- **Sales Tax:** Sales Tax is levied on the sale of a product.

- **Service Tax:** Service Tax is added to services provided in India.
- **Value Added Tax:** Value Added Tax is levied at the discretion of the state government. The tax is levied on goods sold in the state. The tax amount is decided by the state.
- **Customs Duty & Octroi:** Customs Duty is a charge that is applied on purchases that are imported from another country. Octroi is levied on goods that cross state borders within India.
- **Excise Duty:** Excise Duty is levied on all goods manufactured or produced in India.

## Tips



- Think about how quickly you need your money back and pick an investment option accordingly.
- Ensure that you are buying the right type of insurance policy for yourself.
- Remember, not paying taxes can result in penalties ranging from fines to imprisonment.

### 10.3.5 Online Banking, NEFT, RTGS etc.: What is Online Banking

Internet or online banking allows account holders to access their account from a laptop at any location. In this way, instructions can be issued. To access an account, account holders simply need to use their unique customer ID number and password.

Internet banking can be used to:

- Find out an account balance
- Transfer amounts from one account to another
- Arrange for the issuance of cheques
- Instruct payments to be made
- Request for a cheque book
- Request for a statement of accounts
- Make a fixed deposit

### Electronic Funds Transfers

Electronic funds transfer is a convenient way of transferring money from the comfort of one's own home, using integrated banking tools like internet and mobile banking.

Transferring funds via an electronic gateway is extremely convenient. With the help of online banking, you can choose to:

- Transfer funds into your own accounts of the same bank.
- Transfer funds into different accounts of the same bank.
- Transfer funds into accounts in different banks, using NEFT.
- Transfer funds into other bank accounts using RTGS.
- Transfer funds into various accounts using IMPS.

### NEFT

NEFT stands for National Electronic Funds Transfer. This money transfer system allows you to electronically transfer funds from your respective bank accounts to any other account, either in the same bank or belonging to any other bank. NEFT can be used by individuals, firms and corporate organizations to transfer funds between accounts.

In order to transfer funds via NEFT, two things are required:

- A transferring bank
- A destination bank

Before you can transfer funds through NEFT, you will need to register the beneficiary who will be receiving the funds. In order to complete this registration, you will require the following

- |                              |                                |
|------------------------------|--------------------------------|
| • Recipient's name           | • Recipient's bank's name      |
| • Recipient's account number | • Recipient's bank's IFSC code |

## RTGS

RTGS stands for Real Time Gross Settlement. This is a real time funds transfer system which enables you to transfer funds from one bank to another, in real time or on a gross basis. The transferred amount is immediately deducted from the account of one bank, and instantly credited to the other bank's account. The RTGS payment gateway is maintained by the Reserve Bank of India. The transactions between banks are made electronically.

RTGS can be used by individuals, companies and firms to transfer large sums of money. Before remitting funds through RTGS, you will need to add the beneficiary and his bank account details via your online banking account. In order to complete this registration, you will require the following information:

- Name of the beneficiary
- Beneficiary's account number
- Beneficiary's bank address
- Beneficiary's bank's IFSC code

## IMPS

IMPS stands for Immediate Payment Service. This is a real-time, inter-bank, electronic funds transfer system used to transfer money instantly within banks across India. IMPS enables users to make instant electronic transfer payments using mobile phones through both, Mobile Banking and SMS. It can also be used through ATMs and online banking. IMPS is available 24 hours a day and 7 days a week. The system features a secure transfer gateway and immediately confirms orders that have been fulfilled.

To transfer money through IMPS, the you need to:

- Register for IMPS with your bank
- Receive a Mobile Money Identifier (MMID) from the bank
- Receive a MPIN from the bank

Once you have both these, you can login or make a request through SMS to transfer a particular amount to a beneficiary.

For the beneficiary to receive the transferred money, he must:

1. Link his mobile number with his respective account
2. Receive the MMID from the bank

In order to initiate a money transfer through IMPS, you will need to enter the following information:

1. The beneficiary's mobile number
2. The beneficiary's MMID
3. The transfer amount
4. Your MPIN

As soon as money has been deducted from your account and credited into the beneficiary's account, you will be sent a confirmation SMS with a transaction reference number, for future reference.

## Differences Between NEFT, RTGS & IMPS

Criteria	NEFT	RTGS	IMPS
Settlement	Done in batches	Real-time	Real-time
Full form	National Electronic Fund Transfer	Real Time Gross Settlement	Immediate Payment Service
Timings on Monday – Friday	8:00 am – 6:30 pm	9:00 am – 4:30 pm	24x7
Timings on Saturday	8:00 am – 1:00 pm	9:00 am – 1:30 pm	24x7
Minimum amount of money transfer limit	₹ 1	₹ 2 lacs	₹ 1
Maximum amount of money transfer limit	₹ 10 lacs	₹ 10 lacs per day	₹ 2 lacs
Maximum charges as per RBI	Upto 10,000 – ₹ 2.5 above 10,000 – 1 lac – ₹ 5 above 1 – 2 lacs – ₹ 15 above 2 – 5 lacs – ₹ 25 above 5 – 10 lacs – ₹ 25	above 2 – 5 lacs – ₹ 25 above 5 – 10 lacs – ₹ 50	Upto 10,000 – ₹ 5 above 10,000 – 1 lac – ₹ 5 above 1 – 2 lacs – ₹ 15

### Tips



- Never click on any links in any e-mail message to access your online banking website.
- You will never be asked for your credit or debit card details while using online banking.
- Change your online banking password regularly.

## UNIT 10.4. Preparing for Employment & Self Employment

### Unit Objectives



At the end of this unit, you will be able to:

1. Discuss the steps to prepare for an interview
2. Discuss the steps to create an effective Resume
3. Discuss the most frequently asked interview questions
4. Discuss how to answer the most frequently asked interview questions
5. Discuss basic workplace terminology

### 10.4.1 Interview Preparation: How to Prepare for an Interview

The success of your getting the job that you want depends largely on how well your interview for that job goes. Therefore, before you go in for your interview, it is important that you prepare for it with a fair amount of research and planning. Take a look at the steps to follow in order to be well prepared for an interview:

1. **Research the organization that you are having the interview with.**
  - Studying the company beforehand will help you be more prepared at the time of the interview. Your knowledge of the organization will help you answer questions at the time of the interview, and will leave you looking and feeling more confident. This is sure to make you stand out from other, not as well informed, candidates.
  - Look for background information on the company. Try and find an overview of the company and its industry profile.
  - Visit the company website to get a good idea of what the company does. A company website offers a wealth of important information. Read and understand the company's mission statement. Pay attention to the company's products/services and client list. Read through any press releases to get an idea of the company's projected growth and stability.
  - Note down any questions that you have after your research has been completed.
2. **Think about whether your skills and qualifications match the job requirements.**
  - Carefully read through and analyze the job description.
  - Make a note of the knowledge, skills and abilities required to fulfill the job requirements.
  - Take a look at the organization hierarchy. Figure out where the position you are applying for fits into this hierarchy.
3. **Go through the most typical interview questions asked, and prepare your responses.**
  - Remember, in most interviews a mix of resume-based, behavioral and case study questions are asked.
  - Think about the kind of answers you would like to provide to typical questions asked in these three areas.
  - Practice these answers until you can express them confidently and clearly.

**4. Plan your attire for the interview.**

- It is always safest to opt for formal business attire, unless expressly informed to dress in business casual (in which case you should use your best judgement).
- Ensure that your clothes are clean and well-ironed. Pick neutral colours – nothing too bright or flashy.
- The shoes you wear should match your clothes, and should be clean and suitable for an interview.
- Remember, your aim is to leave everyone you meet with the impression that you are a professional and highly efficient person.

**5. Ensure that you have packed everything that you may require during the interview.**

- Carry a few copies of your resume. Use a good quality paper for your resume print outs.
- Always take along a notepad and a pen.
- Take along any information you may need to refer to, in order to fill out an application form.
- Carry a few samples of your work, if relevant.

**6. Remember the importance of non-verbal communication.**

- Practice projecting confidence. Remind yourself to smile and make eye contact. Practice giving a firm handshake.
- Keep in mind the importance of posture. Practice sitting up straight. Train yourself to stop nervous gestures like fidgeting and foot-tapping.
- Practice keeping your reactions in check. Remember, your facial expressions provide a good insight into your true feelings. Practice projecting a positive image.

**7. Make a list of questions to end the interview with.**

- Most interviews will end with the interviewer(s) asking if you have any questions. This is your chance to show that you have done your research and are interested in learning more about the company.
- If the interviewer does not ask you this question, you can inform him/her that you have some queries that you would like to discuss. This is the time for you to refer to the notes you made while studying the company.
- Some good questions to ask at this point are:
  - What do you consider the most important criteria for success in this job?
  - How will my performance be evaluated?
  - What are the opportunities for advancement?
  - What are the next steps in the hiring process?
- Remember, never ask for information that is easily available on the company website.

**Tips**

- Ask insightful and probing questions.
- When communicating, use effective forms of body language like smiling, making eye contact, and actively listening and nodding. Don't slouch, play with nearby items, fidget, chew gum, or mumble.

## 10.4.2 Preparing an Effective Resume: How to Create an Effective Resume

A resume is a formal document that lists a candidate's work experience, education and skills. A good resume gives a potential employer enough information to believe the applicant is worth interviewing. That's why it is so important to create a résumé that is effective. Take a look at the steps to create an effective resume:

### Step 1: Write the Address Section

The Address section occupies the top of your resume. It includes information like your name, address, phone number and e-mail address. Insert a bold line under the section to separate it from rest of your resume.

**Example:**

Jasmine Watts  
Breach Candy, Mumbai – India  
Contact No: +91 2223678270  
Email: jasmine.watts@gmail.com

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### Step 2: Add the Profile Summary Section

This part of your resume should list your overall experiences, achievements, awards, certifications and strengths. You can make your summary as short as 2-3 bullet points or as long as 8-10 bullet points.

**Example:**

#### Profile Summary

- A Content Writer graduated from University of Strathclyde having 6 years of experience in writing website copy.
- Core expertise lies in content creation for e-learning courses, specifically for the K-12 segment.

### Step 3: Include Your Educational Qualifications

When listing your academic records, first list your highest degree. Then add the second highest qualification under the highest one and so on. To provide a clear and accurate picture of your educational background, it is critical that include information on your position, rank, percentage or CPI for every degree or certification that you have listed.

If you have done any certifications and trainings, you can add a Trainings & Certifications section under your Educational Qualifications section.

**Example:**

#### Educational Qualifications

- Masters in International Management (2007) from Columbia University with 8.8 CPI.
- Bachelor of Management Studies (2004) from Mumbai University with 87% marks.
- 10+2 with Math, Stats (2001) from Maharashtra Board with 91% marks.
- High School (1999) from Maharashtra Board with 93% marks.

**Step 4: List Your Technical Skills**

When listing your technical skills, start with the skills that you are most confident about. Then add the skills that you do not have as good a command over. It is perfectly acceptable to include just one skill, if you feel that particular skill adds tremendous value to your résumé. If you do not have any technical skills, you can omit this step.

**Example:**

**Technical Skills**

- Flash
- Photoshop

**Step 5: Insert Your Academic Project Experience**

List down all the important projects that you have worked on. Include the following information in this section:

- |                 |                |                 |
|-----------------|----------------|-----------------|
| • Project title | • Organization | • Platform used |
| • Contribution  | • Description  |                 |

**Example:**

**Academic Projects**

**Project Title:** Different Communication Skills

**Organization:** True Blue Solutions

**Platform used:** Articulate

**Contribution:** Content writing and graphic visualization

**Description:** Development of storyboards for corporate induction & training programs

**Step 6: List Your Strengths**

This is where you list all your major strengths. This section should be in the form of a bulleted list.

**Example:**

**Strengths**

- Excellent oral, written and presentation skills
- Action-oriented and result-focused
- Great time management skills

**Step 7: List Your Extracurricular Activities**

It is very important to show that you have diverse interests and that your life consists of more than academics. Including your extracurricular activities can give you an added edge over other candidates who have similar academic scores and project experiences. This section should be in the form of a bulleted list.

**Example:****Extracurricular Activities**

- Member of the Debate Club
- Played tennis at a national level
- Won first prize in the All India Camel Contest, 2010

**Step 8: Write Your Personal Details**

The last section of your résumé must include the following personal information:

- Date of birth
- Gender & marital status
- Nationality
- Languages known

**Example:****Personal Details**

- Date of birth: 25<sup>th</sup> May, 1981
- Gender & marital status: Female, Single
- Nationality: Indian
- Languages known: English, Hindi, Tamil, French

**Tips**

- Keep your resume file name short, simple and informational.
- Make sure the resume is neat and free from typing errors.
- Always create your resume on plain white paper.

### 10.4.3 Interview FAQs

Take a look at some of the most frequently asked interview questions, and some helpful tips on how to answer them.

#### Q1. Can you tell me a little about yourself?

##### Tips to answer:

- Don't provide your full employment or personal history.
- Offer 2-3 specific experiences that you feel are most valuable and relevant.
- Conclude with how those experiences have made you perfect for this specific role.

#### Q2. How did you hear about the position?

##### Tips to answer:

- Tell the interviewer how you heard about the job – whether it was through a friend (name the friend), event or article (name them) or a job portal (say which one).
- Explain what excites you about the position and what in particular caught your eye about this role.

#### Q3. What do you know about the company?

##### Tips to answer:

- Don't recite the company's About Us page.
- Show that you understand and care about the company's goals.
- Explain why you believe in the company's mission and values.

#### Q4. Why do you want this job?

##### Tips to answer:

- Show that you are passionate about the job.
- Identify why the role is a great fit for you.
- Explain why you love the company.

#### Q5. Why should we hire you?

##### Tips to answer:

- Prove through your words that you can not only do the work, but can definitely deliver excellent results.
- Explain why you would be a great fit with the team and work culture.
- Explain why you should be chosen over any other candidate.

#### Q6. What are your greatest professional strengths?

##### Tips to answer:

- Be honest – share some of your real strengths, rather than give answers that you think sound good.
- Offer examples of specific strengths that are relevant to the position you are applying for.
- Provide examples of how you've demonstrated these strengths.

#### Q7. What do you consider to be your weaknesses?

##### Tips to answer:

- The purpose of this question is to gauge your self-awareness and honesty.
- Give an example of a trait that you struggle with, but that you're working on to improve.

**Q8. What are your salary requirements?****Tips to answer:**

- Do your research beforehand and find out the typical salary range for the job you are applying for.
- Figure out where you lie on the pay scale based on your experience, education, and skills.
- Be flexible. Tell the interviewer that you know your skills are valuable, but that you want the job and are willing to negotiate.

**Q9. What do you like to do outside of work?****Tips to answer:**

- The purpose of this question is to see if you will fit in with the company culture.
- Be honest – open up and share activities and hobbies that interest and excite you.

**Q10. If you were an animal, which one would you want to be?****Tips to answer:**

- The purpose of this question is to see if you are able to think on your feet.
- There's no wrong answer – but to make a great impression try to bring out your strengths or personality traits through your answer.

**Q11: What do you think we could do better or differently?****Tips to answer:**

- The purpose of this question is to see if you have done your research on the company, and to test whether you can think critically and come up with new ideas.
- Suggest new ideas. Show how your interests and expertise would help you execute these ideas.

**Q12: Do you have any questions for us?****Tips to answer:**

- Do not ask questions to which the answers can be easily found on the company website or through a quick online search.
- Ask intelligent questions that show your ability to think critically.

**Tips**

- Be honest and confident while answering.
- Use examples of your past experiences wherever possible to make your answers more impactful.

## 10.4.4 Work Readiness – Terms & Terminologies:

### Basic Workplace Terminology

Every employee should be well versed in the following terms:

- **Annual leave:** Paid vacation leave given by employers to employees.
- **Background Check:** A method used by employers to verify the accuracy of the information provided by potential candidates.
- **Benefits:** A part of an employee's compensation package.
- **Breaks:** Short periods of rest taken by employees during working hours.
- **Compensation Package:** The combination of salary and benefits that an employer provides to his/her employees.
- **Compensatory Time (Comp Time):** Time off in lieu of pay.
- **Contract Employee:** An employee who works for one organization that sells said employee's services to another company, either on a project or time basis.
- **Contract of Employment:** When an employee is offered work in exchange for wages or salary, and accepts the offer made by the employer, a contract of employment exists.
- **Corporate Culture:** The beliefs and values shared by all the members of a company, and imparted from one generation of employees to another.
- **Counter Offer/Counter Proposal:** A negotiation technique used by potential candidates to increase the amount of salary offered by a company.
- **Cover Letter:** A letter that accompanies a candidate's resume. It emphasizes the important points in the candidate's resume and provides real examples that prove the candidate's ability to perform the expected job role.
- **Curriculum Vitae (CV)/Resume:** A summary of a candidate's achievements, educational background, work experience, skills and strengths.
- **Declining Letter:** A letter sent by an employee to an employer, turning down the job offer made by the employer to the employee.
- **Deductions:** Amounts subtracted from an employee's pay and listed on the employee's pay slip.
- **Discrimination:** The act of treating one person not as favourably as another person.
- **Employee:** A person who works for another person in exchange for payment.
- **Employee Training:** A workshop or in-house training that an employee is asked to attend by his or her superior, for the benefit of the employer.
- **Employment Gaps:** Periods of unemployed time between jobs.
- **Fixed-Term Contract:** A contract of employment which gets terminated on an agreed-upon date.
- **Follow-Up:** The act of contacting a potential employer after a candidate has submitted his or her resume.
- **Freelancer/Consultant/Independent Contractor:** A person who works for him or herself and pitches for temporary jobs and projects with different employers.
- **Holiday:** Paid time-off from work.
- **Hourly Rate:** The amount of salary or wages paid for 60 minutes of work.

- **Internship:** A job opportunity offered by an employer to a potential employee, called an intern, to work at the employer's company for a fixed, limited time period.
- **Interview:** A conversation between a potential employee and a representative of an employer, in order to determine if the potential employee should be hired.
- **Job Application:** A form which asks for a candidate's information like the candidate's name, address, contact details and work experience. The purpose of a candidate submitting a job application, is to show that candidate's interest in working for a particular company.
- **Job Offer:** An offer of employment made by an employer to a potential employee.
- **Job Search Agent:** A program that enables candidates to search for employment opportunities by selecting criteria listed in the program, for job vacancies.
- **Lay Off:** A lay off occurs when an employee is temporarily let go from his or her job, due to the employer not having any work for that employee.
- **Leave:** Formal permission given to an employee, by his or her employer, to take a leave of absence from work.
- **Letter of Acceptance:** A letter given by an employer to an employee, confirming the offer of employment made by the employer, as well as the conditions of the offer.
- **Letter of Agreement:** A letter that outlines the terms of employment.
- **Letter of Recommendation:** A letter written for the purpose of validating the work skills of a person.
- **Maternity Leave:** Leave taken from work by women who are pregnant, or who have just given birth.
- **Mentor:** A person who is employed at a higher level than you, who offers you advice and guides you in your career.
- **Minimum wage:** The minimum wage amount paid on an hourly basis.
- **Notice:** An announcement made by an employee or an employer, stating that the employment contract will end on a particular date.
- **Offer of Employment:** An offer made by an employer to a prospective employee that contains important information pertaining to the job being offered, like the starting date, salary, working conditions etc.
- **Open-Ended Contract:** A contract of employment that continues till the employer or employee terminates it.
- **Overqualified:** A person who is not suited for a particular job because he or she has too many years of work experience, or a level of education that is much higher than required for the job, or is currently or was previously too highly paid.
- **Part-Time Worker:** An employee who works for fewer hours than the standard number of hours normally worked.
- **Paternity Leave:** Leave granted to a man who has recently become a father.
- **Recruiters/Headhunters/Executive Search Firms:** Professionals who are paid by employers to search for people to fill particular positions.
- **Resigning/Resignations:** When an employee formally informs his or her employer that he or she is quitting his or her job.
- **Self-Employed:** A person who has his or her own business and does not work in the capacity of an employee.
- **Time Sheet:** A form that is submitted to an employer, by an employee, that contains the number of hours worked every day by the employee.

## UNIT 10.5. Understanding Entrepreneurship

### Unit Objectives



1. At the end of this unit, you will be able to:
2. Discuss the concept of entrepreneurship
3. Discuss the importance of entrepreneurship
4. Describe the characteristics of an entrepreneur
5. Describe the different types of enterprises
6. List the qualities of an effective leader
7. Discuss the benefits of effective leadership
8. List the traits of an effective team
9. Discuss the importance of listening effectively
10. Discuss how to listen effectively
11. Discuss the importance of speaking effectively
12. Discuss how to speak effectively
13. Discuss how to solve problems
14. List important problem solving traits
15. Discuss ways to assess problem solving skills
16. Discuss the importance of negotiation
17. Discuss how to negotiate
18. Discuss how to identify new business opportunities
19. Discuss how to identify business opportunities within your business
20. Understand the meaning of entrepreneur
21. Describe the different types of entrepreneurs
22. List the characteristics of entrepreneurs
23. Recall entrepreneur success stories
24. Discuss the entrepreneurial process
25. Describe the entrepreneurship ecosystem
26. Discuss the government's role in the entrepreneurship ecosystem
27. Discuss the current entrepreneurship ecosystem in India
28. Understand the purpose of the Make in India campaign
29. Discuss the relationship between entrepreneurship and risk appetite
30. Discuss the relationship between entrepreneurship and resilience
31. Describe the characteristics of a resilient entrepreneur
32. Discuss how to deal with failure

### 10.5.1 Concept Introduction, (Characteristic of an Entrepreneur, types of firms / types of enterprises): Entrepreneurs and Entrepreneurship

Anyone who is determined to start a business, no matter what the risk, is an entrepreneur. Entrepreneurs run their own start-up, take responsibility for the financial risks and use creativity, innovation and vast reserves of self-motivation to achieve success. They dream big and are determined to do whatever it takes to turn their idea into a viable offering. The aim of an entrepreneur is to create an enterprise. The process of creating this enterprise is known as entrepreneurship.

#### Importance of Entrepreneurship

Entrepreneurship is very important for the following reasons:

1. It results in the creation of new organizations
2. It brings creativity into the marketplace
3. It leads to improved standards of living
4. It helps develop the economy of a country

#### Characteristics of Entrepreneurs

All successful entrepreneurs have certain characteristics in common.

They are all:

- Extremely passionate about their work
- Confident in themselves
- Disciplined and dedicated
- Motivated and driven
- Highly creative
- Visionaries
- Open-minded
- Decisive

Entrepreneurs also have a tendency to:

- Have a high risk tolerance
- Thoroughly plan everything
- Manage their money wisely
- Make their customers their priority
- Understand their offering and their market in detail
- Ask for advice from experts when required
- Know when to cut their losses

## Examples of Famous Entrepreneurs

Some famous entrepreneurs are:

- Bill Gates (Founder of Microsoft)
- Steve Jobs (Co-founder of Apple)
- Mark Zuckerberg (Founder of Facebook)
- Pierre Omidyar (Founder of eBay)

## Types of Enterprises

As an entrepreneur in India, you can own and run any of the following types of enterprises:

### **Sole Proprietorship**

In a sole proprietorship, a single individual owns, manages and controls the enterprise. This type of business is the easiest to form with respect to legal formalities. The business and the owner have no separate legal existence. All profit belongs to the proprietor, as do all the losses - the liability of the entrepreneur is unlimited.

### **Partnership**

A partnership firm is formed by two or more people. The owners of the enterprise are called partners. A partnership deed must be signed by all the partners. The firm and its partners have no separate legal existence. The profits are shared by the partners. With respect to losses, the liability of the partners is unlimited. A firm has a limited life span and must be dissolved when any one of the partners dies, retires, claims bankruptcy or goes insane.

### **Limited Liability Partnership (LLP)**

In a Limited Liability Partnership or LLP, the partners of the firm enjoy perpetual existence as well as the advantage of limited liability. Each partner's liability is limited to their agreed contribution to the LLP. The partnership and its partners have a separate legal existence.

## Tips

- Learn from others' failures.
- Be certain that this is what you want.
- Search for a problem to solve, rather than look for a problem to attach to your idea.

## 10.5.2 Leadership & Teamwork:

### Leadership and Leaders

Leadership means setting an example for others to follow. Setting a good example means not asking someone to do something that you wouldn't willingly want to do yourself. Leadership is about figuring out what to do in order to win as a team, and as a company.

Leaders believe in doing the right things. They also believe in helping others to do the right things. An effective leader is someone who:

- Creates an inspiring vision of the future.
- Motivates and inspires his team to pursue that vision.

### Leadership Qualities That All Entrepreneurs Need

Building a successful enterprise is only possible if the entrepreneur in charge possesses excellent leadership qualities. Some critical leadership skills that every entrepreneur must have are:

1. **Pragmatism:** This means having the ability to highlight all obstacles and challenges, in order to resolve issues and reduce risks.
2. **Humility:** This means admitting to mistakes often and early, and being quick to take responsibility for your actions. Mistakes should be viewed as challenges to overcome, not opportunities to point blame.
3. **Flexibility:** It is critical for a good leader to be very flexible and quickly adapt to change. It is equally critical to know when to adapt and when not to.
4. **Authenticity:** This means showing both, your strengths and your weaknesses. It means being human and showing others that you are human.
5. **Reinvention:** This means refreshing or changing your leadership style when necessary. To do this, it's important to learn where your leadership gaps lie and find out what resources are required to close them.
6. **Awareness:** This means taking the time to recognize how others view you. It means understanding how your presence affects those around you.

### Benefits of Effective Leadership

Effective leadership results in numerous benefits. Great leadership leads to the leader successfully:

- Gaining the loyalty and commitment of the team members
- Motivating the team to work towards achieving the company's goals and objectives
- Building morale and instilling confidence in the team members
- Fostering mutual understanding and team-spirit among team members
- Convincing team members about the need to change when a situation requires adaptability

## Teamwork and Teams

Teamwork occurs when the people in a workplace combine their individual skills to pursue a common goal. Effective teams are made up of individuals who work together to achieve this common goal. A great team is one who holds themselves accountable for the end result.

## Importance of Teamwork in Entrepreneurial Success

For an entrepreneurial leader, building an effective team is critical to the success of a venture. An entrepreneur must ensure that the team he builds possesses certain crucial qualities, traits and characteristics. An effective team is one which has:

1. **Unity of purpose:** All the team members should clearly understand and be equally committed to the purpose, vision and goals of the team.
2. **Great communication skills:** Team members should have the ability to express their concerns, ask questions and use diagrams, and charts to convey complex information.
3. **The ability to collaborate:** Every member should feel entitled to provide regular feedback on new ideas.
4. **Initiative:** The team should consist of proactive individuals. The members should have the enthusiasm to come up with new ideas, improve existing ideas, and conduct their own research.
5. **Visionary members:** The team should have the ability to anticipate problems and act on these potential problem before they turn into real problems.
6. **Great adaptability skills:** The team must believe that change is a positive force. Change should be seen as the chance to improve and try new things.
7. **Excellent organizational skills:** The team should have the ability to develop standard work processes, balance responsibilities, properly plan projects, and set in place methods to measure progress and ROI.

## Tips



- Don't get too attached to your original idea. Allow it to evolve and change.
- Be aware of your weaknesses and build a team that will complement your shortfalls.
- Hiring the right people is not enough. You need to promote or incentivize your most talented people to keep them motivated.
- Earn your team's respect.

### 10.5.3 Communication Skills: Listening & Speaking: The Importance of Listening Effectively

Listening is the ability to correctly receive and understand messages during the process of communication. Listening is critical for effective communication. Without effective listening skills, messages can easily be misunderstood. This results in a communication breakdown and can lead to the sender and the receiver of the message becoming frustrated or irritated.

It's very important to note that listening is not the same as hearing. Hearing just refers to sounds that you hear. Listening is a whole lot more than that. To listen, one requires focus. It means not only paying attention to the story, but also focusing on how the story is relayed, the way language and voice is used, and even how the speaker uses their body language. The ability to listen depends on how effectively one can perceive and understand both, verbal and non-verbal cues.

### How to Listen Effectively

To listen effectively you should:

- Stop talking
- Stop interrupting
- Focus completely on what is being said
- Nod and use encouraging words and gestures
- Be open-minded
- Think about the speaker's perspective
- Be very, very patient
- Pay attention to the tone that is being used
- Pay attention to the speaker's gestures, facial expressions and eye movements
- Not try and rush the person
- Not let the speaker's mannerisms or habits irritate or distract you

### How to Listen Effectively

How successfully a message gets conveyed depends entirely on how effectively you are able to get it through. An effective speaker is one who enunciates properly, pronounces words correctly, chooses the right words and speaks at a pace that is easily understandable. Besides this, the words spoken out loud need to match the gestures, tone and body language used.

What you say, and the tone in which you say it, results in numerous perceptions being formed. A person who speaks hesitantly may be perceived as having low self-esteem or lacking in knowledge of the discussed topic. Those with a quiet voice may very well be labelled as shy. And those who speak in commanding tones with high levels of clarity, are usually considered to be extremely confident. This makes speaking a very critical communication skill.

## How to Speak Effectively

To speak effectively you should:

- Incorporate body language in your speech like eye contact, smiling, nodding, gesturing etc.
- Build a draft of your speech before actually making your speech.
- Ensure that all your emotions and feelings are under control.
- Pronounce your words distinctly with the correct pitch and intensity. Your speech should be crystal clear at all times.
- Use a pleasant and natural tone when speaking. Your audience should not feel like you are putting on an accent or being unnatural in any way.
- Use precise and specific words to drive your message home. Ambiguity should be avoided at all costs.
- Ensure that your speech has a logical flow.
- Be brief. Don't add any unnecessary information.
- Make a conscious effort to avoid irritating mannerisms like fidgeting, twitching etc.
- Choose your words carefully and use simple words that the majority of the audience will have no difficulty understanding.
- Use visual aids like slides or a whiteboard.
- Speak slowly so that your audience can easily understand what you're saying. However, be careful not to speak too slowly because this can come across as stiff, unprepared or even condescending.
- Remember to pause at the right moments.

## Tips



- If you're finding it difficult to focus on what someone is saying, try repeating their words in your head.
- Always maintain eye contact with the person that you are communicating with, when speaking as well as listening. This conveys and also encourages interest in the conversation.

## 10.5.4 Problem Solving & Negotiation skills:

### What is a Problem?

As per The Concise Oxford Dictionary (1995), a problem is, “A doubtful or difficult matter requiring a solution”

All problems contain two elements:

1. Goals
2. Obstacles

The aim of problem solving is to recognize the obstacles and remove them in order to achieve the goals.

### How to Solve Problems

Solving a problem requires a level of rational thinking. Here are some logical steps to follow when faced with an issue:

**Step 1:** Identify the problem

**Step 2:** Study the problem in detail

**Step 3:** List all possible solutions

**Step 4:** Select the best solution

**Step 5:** Implement the chosen solution

**Step 6:** Check that the problem has really been solved

### Important Traits for Problem Solving

Highly developed problem solving skills are critical for both, business owners and their employees. The following personality traits play a big role in how effectively problems are solved:

- Being open minded
- Asking the right questions
- Being proactive
- Not panicking
- Having a positive attitude
- Focusing on the right problem

### How to Assess for Problem Solving Skills

As an entrepreneur, it would be a good idea to assess the level of problem solving skills of potential candidates before hiring them. Some ways to assess this skill are through:

1. **Application forms:** Ask for proof of the candidate's problem solving skills in the application form.
2. **Psychometric tests:** Give potential candidates logical reasoning and critical thinking tests and see how they fare.
3. **Interviews:** Create hypothetical problematic situations or raise ethical questions and see how the candidates respond.
4. **Technical questions:** Give candidates examples of real life problems and evaluate their thought process.

## What is Negotiation?

Negotiation is a method used to settle differences. The aim of negotiation is to resolve differences through a compromise or agreement while avoiding disputes. Without negotiation, conflicts are likely to lead to resentment between people. Good negotiation skills help satisfy both parties and go a long way towards developing strong relationships.

## Why Negotiate

Starting a business requires many, many negotiations. Some negotiations are small while others are critical enough to make or break a startup. Negotiation also plays a big role inside the workplace. As an entrepreneur, you need to know not only how to negotiate yourself, but also how to train employees in the art of negotiation.

## How to Negotiate

Take a look at some steps to help you negotiate:

<b>Step 1:</b> Pre-Negotiation Preparation	Agree on where to meet to discuss the problem, decide who all will be present and set a time limit for the discussion.
<b>Step 2:</b> Discuss the Problem	This involves asking questions, listening to the other side, putting your views forward and clarifying doubts.
<b>Step 3:</b> Clarify the Objective	Ensure that both parties want to solve the same problem and reach the same goal.
<b>Step 4:</b> Aim for a Win-Win Outcome	Try your best to be open minded when negotiating. Compromise and offer alternate solutions to reach an outcome where both parties win.
<b>Step 5:</b> Clearly Define the Agreement	When an agreement has been reached, the details of the agreement should be crystal clear to both sides, with no scope for misunderstandings.
<b>Step 6:</b> Implement the Agreed Upon Solution	Agree on a course of action to set the solution in motion

## Tips



- Know exactly what you want before you work towards getting it
- Give more importance to listening and thinking, than speaking
- Focus on building a relationship rather than winning
- Remember that your people skills will affect the outcome
- Know when to walk away – sometimes reaching an agreement may not be possible

### 10.5.5 Business Opportunities Identification: Entrepreneurs and Opportunities

*“The entrepreneur always searches for change, responds to it and exploits it as an opportunity.”*

*Peter Drucker*

The ability to identify business opportunities is an essential characteristic of an entrepreneur.

### What is an Opportunity?

The word opportunity suggests a good chance or a favourable situation to do something offered by circumstances.

A business opportunity means a good or favourable change available to run a specific business in a given environment, at a given point of time.

### Common Questions Faced by Entrepreneurs

A critical question that all entrepreneurs face is how to go about finding the business opportunity that is right for them.

Some common questions that entrepreneurs constantly think about are:

- Should the new enterprise introduce a new product or service based on an unmet need?
- Should the new enterprise select an existing product or service from one market and offer it in another where it may not be available?
- Should the enterprise be based on a tried and tested formula that has worked elsewhere?

It is therefore extremely important that entrepreneurs must learn how to identify new and existing business opportunities and evaluate their chances of success.

### When is an Idea an Opportunity?

An idea is an opportunity when:

- It creates or adds value to a customer
- It solves a significant problem, removes a pain point or meets a demand
- Has a robust market and profit margin
- Is a good fit with the founder and management team at the right time and place

### Factors to Consider When Looking for Opportunities

Consider the following when looking for business opportunities:

- |  |                                |
|--|--------------------------------|
| • Economic trends  | • Market trends                |
| • Changes in funding   | • Changes in political support |
| • Changing relationships between vendors, partners and suppliers | • Shift in target audience     |

## Ways to Identify New Business Opportunities

### 1. Identify Market Inefficiencies

When looking at a market, consider what inefficiencies are present in the market. Think about ways to correct these inefficiencies.

### 2. Remove Key Hassles

Rather than create a new product or service, you can innovatively improve a product, service or process.

### 3. Create Something New

Think about how you can create a new experience for customers, based on existing business models.

### 4. Pick a Growing Sector/Industry

Research and find out which sectors or industries are growing and think about what opportunities you can tap in the same.

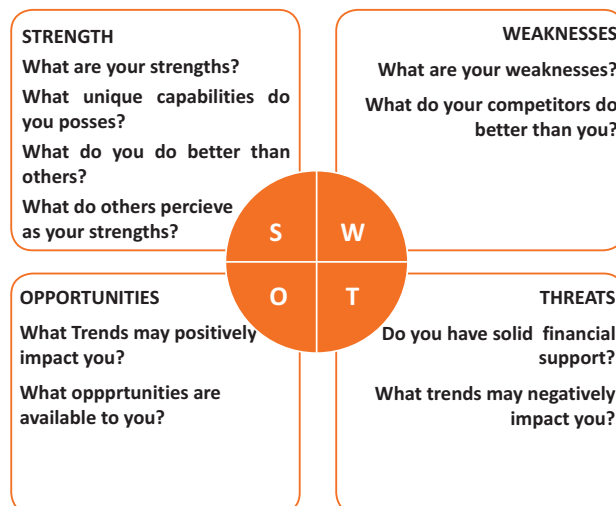
### 5. Think About Product Differentiation

If you already have a product in mind, think about ways to set it apart from the existing ones.

## Ways to Identify Business Opportunities Within Your Business

### 1. SWOT Analysis

An excellent way to identify opportunities inside your business is by creating a SWOT analysis. The acronym SWOT stands for strengths, weaknesses, opportunities, and threats. SWOT analysis framework:



Consider the following when looking for business opportunities:

By looking at yourself and your competitors using the SWOT framework, you can uncover opportunities that you can exploit, as well as manage and eliminate threats that could derail your success.

### 2. Establishing Your USP

Establish your USP and position yourself as different from your competitors. Identify why customers should buy from you and promote that reason.

## Opportunity Analysis

Once you have identified an opportunity, you need to analyze it.

To analyze an opportunity, you must:

- Focus on the idea
- Focus on the market of the idea
- Talk to industry leaders in the same space as the idea
- Talk to players in the same space as the idea

## Tips



- Remember, opportunities are situational.
- Look for a proven track record.
- Avoid the latest craze.
- Love your idea.

## 10.5.6 Entrepreneurship Support Eco - System:

### What is an Entrepreneur?

An entrepreneur is a person who:

- Does not work for an employee
- Runs a small enterprise
- Assumes all the risks and rewards of the enterprise, idea, good or service

## Types of Entrepreneurs

There are four main types of entrepreneurs:

1. **The Traditional Entrepreneur:** This type of entrepreneur usually has some kind of skill – they can be a carpenter, mechanic, cook etc. They have businesses that have been around for numerous years like restaurants, shops and carpenters. Typically, they gain plenty of experience in a particular industry before they begin their own business in a similar field.
2. **The Growth Potential Entrepreneur:** The desire of this type of entrepreneur is to start an enterprise that will grow, win many customers and make lots of money. Their ultimate aim is to eventually sell their enterprise for a nice profit. Such entrepreneurs usually have a science or technical background.
3. **The Project-Oriented Entrepreneur:** This type of entrepreneur generally has a background in the Arts or psychology. Their enterprises tend to be focus on something that they are very passionate about.
4. **The Lifestyle Entrepreneur:** This type of entrepreneur has usually worked as a teacher or a secretary. They are more interested in selling something that people will enjoy, rather than making lots of money.

## Characteristics of an Entrepreneur

Successful entrepreneurs have the following characteristics:

- They are highly motivated
- They are creative and persuasive
- They are mentally prepared to handle each and every task
- They have excellent business skills – they know how to evaluate their cash flow, sales and revenue
- They are willing to take great risks
- They are very proactive – this means they are willing to do the work themselves, rather than wait for someone else to do it
- They have a vision – they are able to see the big picture
- They are flexible and open-minded
- They are good at making decisions

## Entrepreneur Success Stories

### Dhiru Bhai Ambani

Dhirubhai Ambani began his entrepreneurial career by selling “bhajias” to pilgrims in Mount Girnar on weekends. At 16, he moved to Yemen where he worked as a gas-station attendant, and as a clerk in an oil company. He returned to India with Rs. 50,000 and started a textile trading company. Reliance went on to become the first Indian company to raise money in global markets and the first Indian company to feature in Forbes 500 list.

### Dr. Karsanbhai Patel

Karsanbhai Patel made detergent powder in the backyard of his house. He sold his product door-to-door and offered a money back guarantee with every pack that was sold. He charged Rs. 3 per kg when the cheapest detergent at that time was Rs.13 per kg. Dr. Patel eventually started Nirma which became a whole new segment in the Indian domestic detergent market.

## The Entrepreneurial Process

Let's take a look at the stages of the entrepreneurial process.

**Stage 1:** Idea Generation. The entrepreneurial process begins with an idea that has been thought of by the entrepreneur. The idea is a problem that has the potential to be solved.

**Stage 2:** Germination or Recognition. In this stage a possible solution to the identified problem is thought of.

**Stage 3:** Preparation or Rationalization. The problem is studied further and research is done to find out how others have tried to solve the same problem.

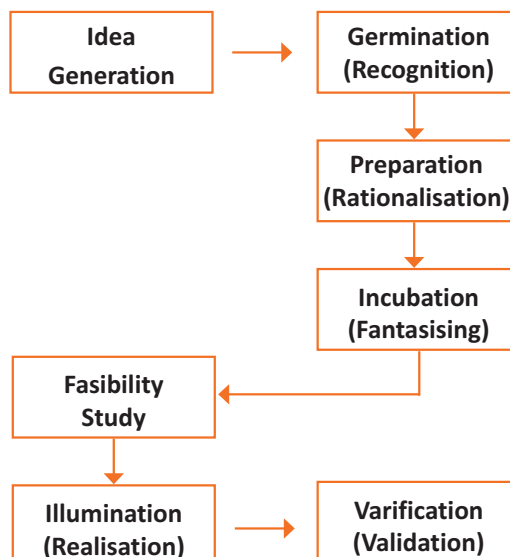
**Stage 4:** Incubation or Fantasizing. This stage involves creative thinking for the purpose of coming up with more ideas. Less thought is given to the problem areas.

**Stage 5:** Feasibility Study: The next step is the creation of a feasibility study to determine if the idea will make a profit and if it should be seen through.

**Stage 6:** Illumination or Realization. This is when all uncertain areas suddenly become clear. The entrepreneur feels confident that his idea has merit.

**Stage 7:** Verification or Validation. In this final stage, the idea is verified to see if it works and if it is useful.

Take a look at the diagram below to get a better idea of this process.



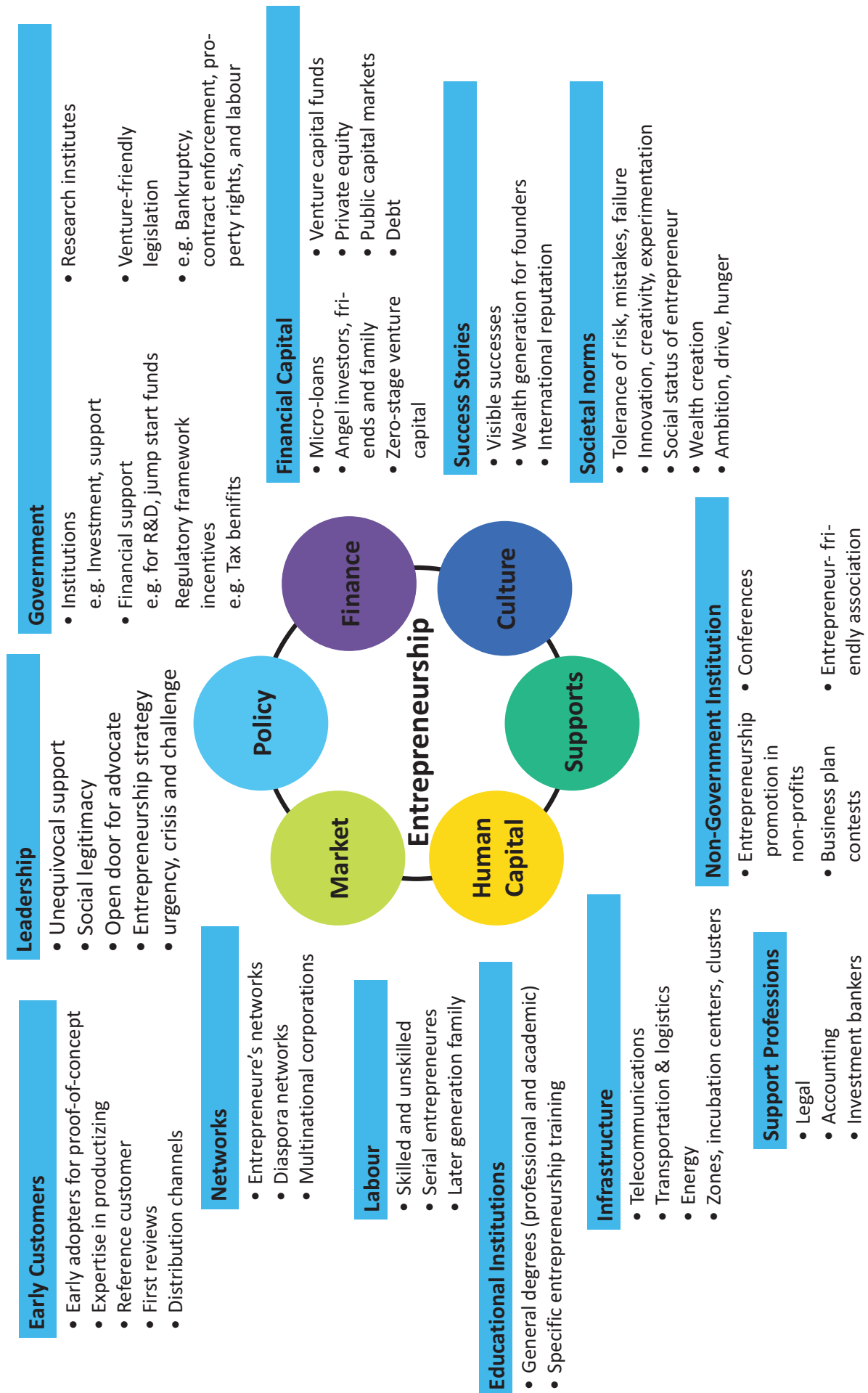
## What is an Entrepreneur?

The entrepreneurship support ecosystem signifies the collective and complete nature of entrepreneurship. New companies emerge and flourish not only because of the courageous, visionary entrepreneurs who launch them, but they thrive as they are set in an environment or 'ecosystem' made of private and public participants. These players nurture and sustain the new ventures, facilitating the entrepreneurs' efforts.

An entrepreneurship ecosystem comprises of the following six domains:

1. **Favourable Culture:** This includes elements such as tolerance of risk and errors, valuable networking and positive social standing of the entrepreneur.
2. **Facilitating Policies & Leadership:** This includes regulatory framework incentives and existence of public research institutes.
3. **Financing Options:** Angel financing, venture capitalists and micro loans would be good examples of this.
4. **Human Capital:** This refers to trained and untrained labour, entrepreneurs and entrepreneurship training programmes, etc.
5. **Conducive Markets for Products & Services:** This refers to an existence or scope of existence of a market for the product/service.
6. **Institutional & Infrastructural Support:** This includes legal and financing advisers, telecommunications, digital and transportation infrastructure, and entrepreneurship networking programmes.

These domains indicate whether there is a strong entrepreneurship support ecosystem and what actions should the government put in place to further encourage this ecosystem. The six domains and their various elements have been graphically depicted.



Every entrepreneurship support ecosystem is unique and all the elements of the ecosystem are interdependent. Although every region's entrepreneurship ecosystem can be broadly described by the above features, each ecosystem is the result of the hundred elements interacting in highly complex and particular ways.

Entrepreneurship ecosystems eventually become (largely) self-sustaining. When the six domains are resilient enough, they are mutually beneficial. At this point, government involvement can and should be significantly minimized. Public leaders do not need to invest a lot to sustain the ecosystem. It is imperative that the entrepreneurship ecosystem incentives are formulated to be self-liquidating, hence focusing on sustainability of the environment.

## Government's Role in the Entrepreneurship Ecosystem

Encouraging new ventures is a major focus for policymakers. Governments across the world are recognizing that new businesses flourish in distinctive types of supportive environments. Policymakers should study the scenario and take into account the following points whilst they formulate policies and regulations that enable successful entrepreneurship support ecosystems.

1. Policymakers should avoid regulations that discourage new entrants and work towards building efficient methods for business startups. Policies and regulations that favour existing, dominant firms over entrepreneurial ventures, restrict competition and obstruct entry for new companies.
2. Instead of developing policies conceptually intended to correct market failures, policymakers should interact with entrepreneurs and understand the challenges faced by them. The feedback should be used to develop policies that incite idea exploration, product development and increased rates of deal flow.
3. Entrepreneurial supporters should create a database that enables identifying who the participants in the ecosystem are and how they are connected. These ecosystem maps are useful tools in developing engagement strategies.
4. Disruptions are unavoidable in economic and social life. However, it's important to note that economic disruption gives rise to entrepreneurial opportunities. Architects of the entrepreneurship ecosystems (entrepreneurs, mentors, policymakers and consumers,) should anticipate these dips, thus capitalizing on the opportunities they create.

The need for effective strategies to enable local entrepreneurship support ecosystems is a practical one. Better understanding of the actual ecosystems provides a framework within which policy makers can ask relevant questions, envisage more efficient approaches, and assess ensuing outcomes.

## Snapshot of the Entrepreneurship Ecosystem in India

Entrepreneurship has earned a newfound respect in India. Many Indians, with exposure to the world of business, who traditionally would have opted for a job, are setting up their own ventures. Many elements of the entrepreneurship ecosystem are beginning to come together. For example, increase in venture capitalists, government schemes and incubators, academia industry linkages, and emerging clusters and support to rural economy. All these initiatives are effective but there is a need to scale up and enrich the ecosystem further in the following ways:

1. We need to review our attitude towards failures and accept them as learning experiences.
2. We must encourage the educated to become entrepreneurs and provide students in schools and colleges with entrepreneurship skills.

3. Universities, research labs and the government need to play the role of enablers in the entrepreneurship support ecosystem.
4. Policymakers need to focus on reducing the obstacles such as corruption, red tape and bureaucracy.
5. We need to improve our legal systems and court international venture capital firms and bring them to India.
6. We must devise policies and methods to reach the secondary and tertiary towns in India, where people do not have access to the same resources available in the cities.

Today, there is a huge opportunity in this country to introduce innovative solutions that are capable of scaling up, and collaborating within the ecosystem as well as enriching it.

## Make in India Campaign

Every entrepreneur has certain needs. Some of their important needs are:

- To easily get loans
- To easily find investors
- To get tax exemptions
- To easily access resources and good infrastructure
- To enjoy a procedure that is free of hassles and is quick
- To be able to easily partner with other firms

The Make in India campaign, launched by Prime Minister Modi aims to satisfy all these needs of young, aspiring entrepreneurs. Its objective is to:

- Make investment easy
- Support new ideas
- Enhance skill development
- Safeguard the ideas of entrepreneurs
- Create state-of-the-art facilities for manufacturing goods

## Tips



- Research the existing market, network with other entrepreneurs, venture capitalists, angel investors, and thoroughly review the policies in place to enable your entrepreneurship.
- Failure is a stepping stone and not the end of the road. Review yours and your peers' errors and correct them in your future venture.
- Be proactive in your ecosystem. Identify the key features of your ecosystem and enrich them to ensure self-sustainability of your entrepreneurship support ecosystem.

### 10.5.7 Risk Appetite & Resilience:

#### Entrepreneurship and Risk

Entrepreneurs are inherently risk takers. They are path-makers not path-takers. Unlike a normal, cautious person, an entrepreneur would not think twice about quitting his job (his sole income) and taking a risk on himself and his idea.

An entrepreneur is aware that while pursuing his dreams, assumptions can be proven wrong and unforeseen events may arise. He knows that after dealing with numerous problems, success is still not guaranteed. Entrepreneurship is synonymous with the ability to take risks. This ability, called risk-appetite, is an entrepreneurial trait that is partly genetic and partly acquired.

#### What is Risk Appetite?

Risk appetite is defined as the extent to which a company is equipped to take risk, in order to achieve its objectives. Essentially, it refers to the balance, struck by the company, between possible profits and the hazards caused by changes in the environment (economic ecosystem, policies, etc.). Taking on more risk may lead to higher rewards but have a high probability of losses as well. However, being too conservative may go against the company as it can miss out on good opportunities to grow and reach their objectives.

The levels of risk appetite can be broadly categorized as “low”, “medium” and “high.” The company’s entrepreneur(s) have to evaluate all potential alternatives and select the option most likely to succeed. Companies have varying levels of risk appetites for different objectives. The levels depend on:

- The type of industry
- Market pressures
- Company objectives

For example, a startup with a revolutionary concept will have a very high risk appetite. The startup can afford short term failures before it achieves longer term success. This type of appetite will not remain constant and will be adjusted to account for the present circumstances of the company.

#### Risk Appetite Statement

Companies have to define and articulate their risk appetite in sync with decisions made about their objectives and opportunities. The point of having a risk appetite statement is to have a framework that clearly states the acceptance and management of risk in business. It sets risk taking limits within the company. The risk appetite statement should convey the following:

- The nature of risks the business faces.
- Which risks the company is comfortable taking on and which risks are unacceptable.
- How much risk to accept in all the risk categories.
- The desired tradeoff between risk and reward.
- Measures of risk and methods of examining and regulating risk exposures.

## Entrepreneurship and Resilience

Entrepreneurs are characterized by a set of qualities known as resilience. These qualities play an especially large role in the early stages of developing an enterprise. Risk resilience is an extremely valuable characteristic as it is believed to protect entrepreneurs against the threat of challenges and changes in the business environment.

## What is Entrepreneurial Resilience?

Resilience is used to describe individuals who have the ability to overcome setbacks related to their life and career aspirations. A resilient person is someone who is capable of easily and quickly recovering from setbacks. For the entrepreneur, resilience is a critical trait. Entrepreneurial resilience can be enhanced in the following ways:

- By developing a professional network of coaches and mentors
- By accepting that change is a part of life
- By viewing obstacles as something that can be overcome

## Characteristics of a Resilient Entrepreneur

The characteristics required to make an entrepreneur resilient enough to go the whole way in their business enterprise are:

- A strong internal sense of control
- Strong social connections
- Skill to learn from setbacks
- Ability to look at the bigger picture
- Ability to diversify and expand
- Survivor attitude
- Cash-flow conscious habits
- Attention to detail

## Tips



- Cultivate a great network of clients, suppliers, peers, friends and family. This will not only help you promote your business, but will also help you learn, identify new opportunities and stay tuned to changes in the market.
- Don't dwell on setbacks. Focus on what you need to do next to get moving again.
- While you should try and curtail expenses, ensure that it is not at the cost of your growth.

## 10.5.8 Success & Failures: Understanding Successes and Failures in Entrepreneurship

Shyam is a famous entrepreneur, known for his success story. But what most people don't know, is that Shyam failed numerous times before his enterprise became a success. Read his interview to get an idea of what entrepreneurship is really about, straight from an entrepreneur who has both, failed and succeeded.

**Interviewer:** Shyam, I have heard that entrepreneurs are great risk-takers who are never afraid of failing. Is this true?

**Shyam:** Ha ha, no of course it's not true! Most people believe that entrepreneurs need to be fearlessly enthusiastic. But the truth is, fear is a very normal and valid human reaction, especially when you are planning to start your own business! In fact, my biggest fear was the fear of failing. The reality is, entrepreneurs fail as much as they succeed. The trick is to not allow the fear of failing to stop you from going ahead with your plans. Remember, failures are lessons for future success!

**Interviewer:** What, according to you, is the reason that entrepreneurs fail?

**Shyam:** Well, there is no one single reason why entrepreneurs fail. An entrepreneur can fail due to numerous reasons. You could fail because you have allowed your fear of failure to defeat you. You could fail because you are unwilling to delegate (distribute) work. As the saying goes, "You can do anything, but not everything!" You could fail because you gave up too easily – maybe you were not persistent enough. You could fail because you were focusing your energy on small, insignificant tasks and ignoring the tasks that were most important. Other reasons for failing are partnering with the wrong people, not being able to sell your product to the right customers at the right time at the right price... and many more reasons!

**Interviewer:** As an entrepreneur, how do you feel failure should be looked at?

**Shyam:** I believe we should all look at failure as an asset, rather than as something negative. The way I see it, if you have an idea, you should try to make it work, even if there is a chance that you will fail. That's because not trying is failure right there, anyway! And failure is not the worst thing that can happen. I think having regrets because of not trying, and wondering 'what if' is far worse than trying and actually failing.

**Interviewer:** How did you feel when you failed for the first time?

**Shyam:** I was completely heartbroken! It was a very painful experience. But the good news is, you do recover from the failure. And with every subsequent failure, the recovery process gets a lot easier. That's because you start to see each failure more as a lesson that will eventually help you succeed, rather than as an obstacle that you cannot overcome. You will start to realize that failure has many benefits.

**Interviewer:** Can you tell us about some of the benefits of failing?

**Shyam:** One of the benefits that I have experienced personally from failing is that the failure made me see things in a new light. It gave me answers that I didn't have before. Failure can make you a lot stronger. It also helps keep your ego in control.

**Interviewer:** What advice would you give entrepreneurs who are about to start their own enterprises?

**Shyam:** I would tell them to do their research and ensure that their product is something that is actually wanted by customers. I'd tell them to pick their partners and employees very wisely and cautiously. I'd tell them that it's very important to be aggressive – push and market your product as aggressively as possible. I would warn them that starting an enterprise is very expensive and that they should be prepared for a situation where they run out of money.

I would tell them to create long term goals and put a plan in action to achieve that goal. I would tell them to build a product that is truly unique. Be very careful and ensure that you are not copying another startup. Lastly, I'd tell them that it's very important that they find the right investors.

**Interviewer:** That's some really helpful advice, Shyam! I'm sure this will help all entrepreneurs to be more prepared before they begin their journey! Thank you for all your insight!

## Tips



- Remember that nothing is impossible.
- Identify your mission and your purpose before you start.
- Plan your next steps – don't make decisions hastily.

## UNIT 10.6: Preparing to be an Entrepreneur

### Unit Objectives



**At the end of this unit, you will be able to:**

1. Discuss how market research is carried out
2. Describe the 4 Ps of marketing
3. Discuss the importance of idea generation
4. Recall basic business terminology
5. Discuss the need for CRM
6. Discuss the benefits of CRM
7. Discuss the need for networking
8. Discuss the benefits of networking
9. Understand the importance of setting goals
10. Differentiate between short-term, medium-term and long-term goals
11. Discuss how to write a business plan
12. Explain the financial planning process
13. Discuss ways to manage your risk
14. Describe the procedure and formalities for applying for bank finance
15. Discuss how to manage your own enterprise
16. List important questions that every entrepreneur should ask before starting an enterprise

### 10.6.1 Market Study / The 4 Ps of Marketing / Importance of an IDEA: Understanding Market Research

Market research is the process of gathering, analyzing and interpreting market information on a product or service that is being sold in that market. It also includes information on:

- Past, present and prospective customers
- Customer characteristics and spending habits
- The location and needs of the target market
- The overall industry
- Relevant competitors

Market research involves two types of data:

- Primary information. This is research collected by yourself or by someone hired by you.
- Secondary information. This is research that already exists and is out there for you to find and use.

**Primary research**

Primary research can be of two types:

- Exploratory: This is open-ended and usually involves detailed, unstructured interviews.
- Specific: This is precise and involves structured, formal interviews. Conducting specific research is the more expensive than conducting exploratory research.

**Secondary research**

Secondary research uses outside information. Some common secondary sources are:

- Public sources: These are usually free and have a lot of good information. Examples are government departments, business departments of public libraries etc.
- Commercial sources: These offer valuable information but usually require a fee to be paid. Examples are research and trade associations, banks and other financial institutions etc.
- Educational institutions: These offer a wealth of information. Examples are colleges, universities, technical institutes etc.

**The 4 Ps of Marketing**

The 4 Ps of marketing are Product, Price, Promotion and Place. Let's look at each of these 4 Ps in detail.

**Product**

A product can be:

- A tangible good
- An intangible service

Whatever your product is, it is critical that you have a clear understanding of what you are offering, and what its unique characteristics are, before you begin with the marketing process.

Some questions to ask yourself are:

- What does the customer want from the product/service?
- What needs does it satisfy?
- Are there any more features that can be added?
- Does it have any expensive and unnecessary features?
- How will customers use it?
- What should it be called?
- How is it different from similar products?
- How much will it cost to produce?
- Can it be sold at a profit?

## Price

Once all the elements of Product have been established, the Price factor needs to be considered. The Price of a Product will depend on several factors such as profit margins, supply, demand and the marketing strategy.

Some questions to ask yourself are:

- What is the value of the product/service to customers?
- Do local products/services have established price points?
- Is the customer price sensitive?
- Should discounts be offered?
- How is your price compared to that of your competitors?

## Promotion

Once you are certain about your Product and your Price, the next step is to look at ways to promote it. Some key elements of promotion are advertising, public relations, social media marketing, email marketing, search engine marketing, video marketing and more.

Some questions to ask yourself are:

- Where should you promote your product or service?
- What is the best medium to use to reach your target audience?
- When would be the best time to promote your product?
- How are your competitors promoting their products?

## Place

According to most marketers, the basis of marketing is about offering the right product, at the right price, at the right place, at the right time. For this reason, selecting the best possible location is critical for converting prospective clients into actual clients.

Some questions to ask yourself are:

- Will your product or service be looked for in a physical store, online or both?
- What should you do to access the most appropriate distribution channels?
- Will you require a sales force?
- Where are your competitors offering their products or services?
- Should you follow in your competitors' footsteps?
- Should you do something different from your competitors?

## Importance of an IDEA

Ideas are the foundation of progress. An idea can be small or ground-breaking, easy to accomplish or extremely complicated to implement. Whatever the case, the fact that it is an idea gives it merit. Without ideas, nothing is possible. Most people are afraid to speak out their ideas, out for fear of being ridiculed. However, if are an entrepreneur and want to remain competitive and innovative, you need to bring your ideas out into the light.

Some ways to do this are by:

- Establishing a culture of brainstorming where you invite all interested parties to contribute
- Discussing ideas out loud so that people can add their ideas, views, opinions to them
- Being open minded and not limiting your ideas, even if the idea who have seems ridiculous
- Not discarding ideas that you don't work on immediately, but instead making a note of them and shelving them so they can be revisited at a later date

## Tips



- Keep in mind that good ideas do not always have to be unique.
- Remember that timing plays a huge role in determining the success of your idea.
- Situations and circumstances will always change, so be flexible and adapt your idea accordingly.

## 10.6.2 Business Entity Concepts:

### Basic Business Terminology

If your aim is to start and run a business, it is crucial that you have a good understanding of basic business terms. Every entrepreneur should be well versed in the following terms:

- **Accounting:** A systematic method of recording and reporting financial transactions.
- **Accounts payable:** Money owed by a company to its creditors.
- **Accounts Receivable:** The amount a company is owed by its clients.
- **Assets:** The value of everything a company owns and uses to conduct its business.
- **Balance Sheet:** A snapshot of a company's assets, liabilities and owner's equity at a given moment.
- **Bottom Line:** The total amount a business has earned or lost at the end of a month.
- **Business:** An organization that operates with the aim of making a profit.
- **Business to Business (B2B):** A business that sells goods or services to another business.
- **Business to Consumer (B2C):** A business that sells goods or services directly to the end user.
- **Capital:** The money a business has in its accounts, assets and investments. The two main types of capital are debt and equity.
- **Cash Flow:** The overall movement of funds through a business each month, including income and expenses.
- **Cash Flow Statement:** A statement showing the money that entered and exited a business during a specific period of time.
- **Contract:** A formal agreement to do work for pay.
- **Depreciation:** The degrading value of an asset over time.
- **Expense:** The costs that a business incurs through its operations.
- **Finance:** The management and allocation of money and other assets.
- **Financial Report:** A comprehensive account of a business' transactions and expenses.
- **Fixed Cost:** A one-time expense.
- **Income Statement (Profit and Loss Statement):** Shows the profitability of a business during a period of time.
- **Liabilities:** The value of what a business owes to someone else.
- **Marketing:** The process of promoting, selling and distributing a product or service.
- **Net Income/Profit:** Revenues minus expenses.
- **Net Worth:** The total value of a business.
- **Payback Period:** The amount of time it takes to recover the initial investment of a business.
- **Profit Margin:** The ratio of profit, divided by revenue, displayed as a percentage.
- **Return on Investment (ROI):** The amount of money a business gets as return from an investment.

- Revenue: The total amount of income before expenses are subtracted.
- Sales Prospect: A potential customer.
- Supplier: A provider of supplies to a business.
- Target Market: A specific group of customers at which a company's products and services are aimed.
- Valuation: An estimate of the overall worth of the business.
- Variable Cost: Expenses that change in proportion to the activity of a business.
- Working Capital: Calculated as current assets minus current liabilities.

### 10.6.3 CRM & Networking: What is CRM?

CRM stands for Customer Relationship Management. Originally the expression Customer Relationship Management meant managing one's relationship with customers. However, today it refers to IT systems and software designed to help companies manage their relationships.

### The Need for CRM

The better a company can manage its relationships with its customers, the higher the chances of the company's success. For any entrepreneur, the ability to successfully retain existing customers and expand the enterprise is paramount. This is why IT systems that focus on addressing the problems of dealing with customers on a daily basis are becoming more and more in demand.

Customer needs change over time, and technology can make it easier to understand what customers really want. This insight helps companies to be more responsive to the needs of their customers. It enables them to modify their business operations when required, so that their customers are always served in the best manner possible. Simply put, CRM helps companies recognize the value of their clients and enables them to capitalize on improved customer relations.

### Benefits of CRM

CRM has a number of important benefits:

- It helps improve relations with existing customers which can lead to:
  - Increased sales
  - Identification of customer needs
  - Cross-selling of products
- It results in better marketing of one's products or services
- It enhances customer satisfaction and retention
- It improves profitability by identifying and focusing on the most profitable customers

### 6.3.4 What is Networking?

In business, networking means leveraging your business and personal connections in order to bring in a regular supply of new business. This marketing method is effective as well as low cost. It is a great way to develop sales opportunities and contacts. Networking can be based on referrals and introductions, or can take place via phone, email, and social and business networking websites.

### 6.3.5 The Need for Networking

Networking is an essential personal skill for business people, but it is even more important for entrepreneurs. The process of networking has its roots in relationship building. Networking results in greater communication and a stronger presence in the entrepreneurial ecosystem. This helps build strong relationships with other entrepreneurs.

Business networking events held across the globe play a huge role in connecting like-minded entrepreneurs who share the same fundamental beliefs in communication, exchanging ideas and converting ideas into realities. Such networking events also play a crucial role in connecting entrepreneurs with potential investors. Entrepreneurs may have vastly different experiences and backgrounds but they all have a common goal in mind – they all seek connection, inspiration, advice, opportunities and mentors. Networking offers them a platform to do just that.

## Benefits of Networking

Networking offers numerous benefits for entrepreneurs. Some of the major benefits are:

- Getting high quality leads
- Increased business opportunities
- Good source of relevant connections
- Advice from like-minded entrepreneurs
- Gaining visibility and raising your profile
- Meeting positive and enthusiastic people
- Increased self-confidence
- Satisfaction from helping others
- Building strong and lasting friendships

## Tips



- Use social media interactions to identify needs and gather feedback.
- When networking, ask open-ended questions rather than yes/no type questions.

### 10.6.4 Business Plan: Why Set Goals

Setting goals is important because it gives you long-term vision and short-term motivation. Goals can be short term, medium term and long term.

#### Short-Term Goals

- These are specific goals for the immediate future.

**Example:** Repairing a machine that has failed.

#### Medium-Term Goals

- These goals are built on your short term goals.
- They do not need to be as specific as your short term goals.

**Example:** Arranging for a service contract to ensure that your machines don't fail again.

#### Long-Term Goals

These goals require time and planning.

They usually take a year or more to achieve.

**Example:** Planning your expenses so you can buy new machinery

### Why Create a Business Plan

A business plan is a tool for understanding how your business is put together. It can be used to monitor progress, foster accountability and control the fate of the business. It usually offers a 3-5 year projection and outlines the plan that the company intends to follow to grow its revenues. A business plan is also a very important tool for getting the interest of key employees or future investors.

A business plan typically comprises of eight elements.

### Elements of a Business Plan

#### Executive Summary

The executive summary follows the title page. The summary should clearly state your desires as the business owner in a short and businesslike way. It is an overview of your business and your plans. Ideally this should not be more than 1-2 pages.

Your Executive Summary should include:

- The Mission Statement: Explain what your business is all about.

#### **Example: Nike's Mission Statement**

Nike's mission statement is "To bring inspiration and innovation to every athlete in the world."

- Company Information: Provide information like when your business was formed, the names and roles of the founders, the number of employees, your business location(s) etc.
- Growth Highlights: Mention examples of company growth. Use graphs and charts where possible.
- Your Products/Services: Describe the products or services provided.
- Financial Information: Provide details on current bank and investors.
- Summarize future plans: Describe where you see your business in the future.

### **Business Description**

The second section of your business plan needs to provide a detailed review of the different elements of your business. This will help potential investors to correctly understand your business goal and the uniqueness of your offering.

Your Business Description should include:

- A description of the nature of your business
- The market needs that you are aiming to satisfy
- The ways in which your products and services meet these needs
- The specific consumers and organizations that you intend to serve
- Your specific competitive advantages

### **Market Analysis**

The market analysis section usually follows the business description. The aim of this section is to showcase your industry and market knowledge. This is also the section where you should lay down your research findings and conclusions.

Your Market Analysis should include:

- Your industry description and outlook
- Information on your target market
- The needs and demographics of your target audience
- The size of your target market
- The amount of market share you want to capture
- Your pricing structure
- Your competitive analysis
- Any regulatory requirements

### **Organization & Management**

This section should come immediately after the Market Analysis.

Your Organization & Management section should include:

- Your company's organizational structure
- Details of your company's ownership
- Details of your management team
- Qualifications of your board of directors
- Detailed descriptions of each division/department and its function
- The salary and benefits package that you offer your people
- The incentives that you offer

### **Service or Product Line**

The next section is the service or product line section. This is where you describe your service or product, and stress on their benefits to potential and current customers. Explain in detail why your product of choice will fulfill the needs of your target audience.

Your Service or Product Line section should include:

- A description of your product/service
- A description of your product or service's life cycle
- A list of any copyright or patent filings
- A description of any R&D activities that you are involved in or planning

### Marketing & Sales

Once the Service or Product Line section of your plan has been completed, you should start on the description of the marketing and sales management strategy for your business.

Your Marketing section should include the following strategies:

- **Market penetration strategy:** This strategy focuses on selling your existing products or services in existing markets, in order to increase your market share.
- **Growth strategy:** This strategy focuses on increasing the amount of market share, even if it reduces earnings in the short-term.
- **Channels of distribution strategy:** These can be wholesalers, retailers, distributors and even the internet.
- **Communication strategy:** These can be written strategies (e-mail, text, chat), oral strategies (phone calls, video chats, face-to-face conversations), non-verbal strategies (body language, facial expressions, tone of voice) and visual strategies (signs, webpages, illustrations).

Your Sales section should include the following information:

- **A salesforce strategy:** This strategy focuses on increasing the revenue of the enterprise.
- **A breakdown of your sales activities:** This means detailing out how you intend to sell your products or services – will you sell it offline or online, how many units do you intend to sell, what price do you plan to sell each unit at, etc.

### Funding Request

This section is specifically for those who require funding for their venture.

The Funding Request section should include the following information:

- How much funding you currently require.
- How much funding you will require over the next five years. This will depend on your long-term goals.
- The type of funding you want and how you plan to use it. Do you want funding that can be used only for a specific purpose, or funding that can be used for any kind of requirement?
- Strategic plans for the future. This will involve detailing out your long-term plans – what these plans are and how much money you will require to put these plans in motions.
- Historical and prospective financial information. This can be done by creating and maintaining all your financial records, right from the moment your enterprise started, to the present day. Documents required for this are your balance sheet which contains details of your company's assets and liabilities, your income statement which lists your company's revenues, expenses and net income for the year, your tax returns (usually for the last three years) and your cash flow budget which lists the cash that came in, the cash that went out and states whether you had a cash deficit (negative balance) or surplus (positive balance) at the end of each month.

### Financial Planning

Before you begin building your enterprise, you need to plan your finances. Take a look at the steps for financial planning:

**Step 1:** Create a financial plan. This should include your goals, strategies and timelines for accomplishing these goals.

**Step 2:** Organize all your important financial documents. Maintain a file to hold your investment details, bank statements, tax papers, credit card bills, insurance papers and any other financial records.

**Step 3:** Calculate your net worth. This means figure out what you own (assets like your house, bank accounts, investments etc.), and then subtract what you owe (liabilities like loans, pending credit card amounts etc.) the amount you are left with is your net worth.

**Step 4:** Make a spending plan. This means write down in detail where your money will come from, and where it will go.

**Step 5:** Build an emergency fund. A good emergency fund contains enough money to cover at least 6 months' worth of expenses.

**Step 6:** Set up your insurance. Insurance provides long term financial security and protects you against risk.

### Risk Management

As an entrepreneur, it is critical that you evaluate the risks involved with the type of enterprise that you want to start, before you begin setting up your company. Once you have identified potential risks, you can take steps to reduce them. Some ways to manage risks are:

- Research similar business and find out about their risks and how they were minimized.
- Evaluate current market trends and find out if similar products or services that launched a while ago are still being well received by the public.
- Think about whether you really have the required expertise to launch your product or service.
- Examine your finances and see if you have enough income to start your enterprise.
- Be aware of the current state of the economy, consider how the economy may change over time, and think about how your enterprise will be affected by any of those changes.
- Create a detailed business plan.

### Tips



- Ensure all the important elements are covered in your plan.
- Scrutinize the numbers thoroughly.
- Be concise and realistic.
- Be conservative in your approach and your projections.
- Use visuals like charts, graphs and images wherever possible.

## 10.6.5 Procedure and Formalities for Bank Finance:

### The Need for Bank Finance

For entrepreneurs, one of the most difficult challenges faced involves securing funds for startups. With numerous funding options available, entrepreneurs need to take a close look at which funding methodology works best for them. In India, banks are one of the largest funders of startups, offering funding to thousands of startups every year.

### What Information Should Entrepreneurs Offer Banks for Funding?

When approaching a bank, entrepreneurs must have a clear idea of the different criteria that banks use to screen, rate and process loan applications. Entrepreneurs must also be aware of the importance of providing banks with accurate and correct information. It is now easier than ever for financial institutions to track any default behaviour of loan applicants. Entrepreneurs looking for funding from banks must provide banks with information relating to their general credentials, financial situation and guarantees or collaterals that can be offered.

#### General Credentials

This is where you, as an entrepreneur, provide the bank with background information on yourself. Such information includes:

- **Letter(s) of Introduction:** This letter should be written by a respected business person who knows you well enough to introduce you. The aim of this letter is set across your achievements and vouch for your character and integrity.
- **Your Profile:** This is basically your resume. You need to give the bank a good idea of your educational achievements, professional training, qualifications, employment record and achievements.
- **Business Brochure:** A business brochure typically provides information on company products, clients, how long the business has been running for etc.
- **Bank and Other References:** If you have an account with another bank, providing those bank references is a good idea.
- **Proof of Company Ownership or Registration:** In some cases, you may need to provide the bank with proof of company ownership and registration. A list of assets and liabilities may also be required.

#### Financial Situation

Banks will expect current financial information on your enterprise. The standard financial reports you should be prepared with are:

- |                       |                                |
|-----------------------|--------------------------------|
| • Balance Sheet       | • Profit-and-Loss Account      |
| • Cash-Flow Statement | • Projected Sales and Revenues |
| • Business Plan       | • Feasibility Study            |

#### Guarantees or Collaterals

Usually banks will refuse to grant you a loan without security. You can offer assets which the bank can seize and sell off if you do not repay the loan. Fixed assets like machinery, equipment, vehicles etc. are also considered to be security for loans.

## The Lending Criteria of Banks

Your request for funding will have a higher chance of success if you can satisfy the following lending criteria:

- Good cash flow
- Adequate shareholders' funds
- Adequate security
- Experience in business
- Good reputation

## The Procedure

To apply for funding the following procedure will need to be followed.

1. Submit your application form and all other required documents to the bank.
2. The bank will carefully assess your credit worthiness and assign ratings by analyzing your business information with respect to parameters like management, financial, operational and industry information as well as past loan performance.
3. The bank will make a decision as to whether or not you should be given funding.

## Tips



- Get advice on funding options from experienced bankers.
- Be cautious and avoid borrowing more than you need, for longer than you need, at an interest rate that is higher than you are comfortable with.

## 10.6.6 Enterprise Management - An Overview:

### How to Manage Your Enterprise

To manage your enterprise effectively you need to look at many different aspects, right from managing the day-to-day activities to figuring out how to handle a large scale event. Let's take a look at some simple steps to manage your company effectively.

#### **Step 1: Use your leadership skills and ask for advice when required.**

Let's take the example of Ramu, an entrepreneur who has recently started his own enterprise. Ramu has good leadership skills – he is honest, communicates well, knows how to delegate work etc. These leadership skills definitely help Ramu in the management of his enterprise. However, sometimes Ramu comes across situations that he is unsure how to handle. What should Ramu do in this case? One solution is for him to find a more experienced manager who is willing to mentor him. Another solution is for Ramu to use his networking skills so that he can connect with managers from other organizations, who can give him advice on how to handle such situations.

#### **Step 2: Divide your work amongst others – realize that you cannot handle everything yourself.**

Even the most skilled manager in the world will not be able to manage every single task that an enterprise will demand of him. A smart manager needs to realize that the key to managing his enterprise lies in his dividing all his work between those around him. This is known as delegation. However, delegating is not enough. A manager must delegate effectively if he wants to see results. This is important because delegating, when done incorrectly, can result in you creating even more work for yourself. To delegate effectively, you can start by making two lists. One list should contain the things that you know you need to handle yourself. The second list should contain the things that you are confident can be given to others to manage and handle. Besides incorrect delegation, another issue that may arise is over-delegation. This means giving away too many of your tasks to others. The problem with this is, the more tasks you delegate, the more time you will spend tracking and monitoring the work progress of those you have handed the tasks to. This will leave you with very little time to finish your own work.

#### **Step 3: Hire the right people for the job.**

Hiring the right people goes a long way towards effectively managing your enterprise. To hire the best people suited for the job, you need to be very careful with your interview process. You should ask potential candidates the right questions and evaluate their answers carefully. Carrying out background checks is always a good practice. Running a credit check is also a good idea, especially if the people you are planning to hire will be handling your money. Create a detailed job description for each role that you want filled and ensure that all candidates have a clear and correct understanding of the job description. You should also have an employee manual in place, where you

put down every expectation that you have from your employees. All these actions will help ensure that the right people are approached for running your enterprise.

#### **Step 4: Motivate your employees and train them well.**

Your enterprise can only be managed effectively if your employees are motivated to work hard for your enterprise. Part of being motivated involves your employees believing in the vision and mission of your enterprise and genuinely wanting to make efforts towards pursuing the same. You can motivate your employees with recognition, bonuses and rewards for achievements. You can also motivate them by telling them about how their efforts have led to the company's success. This will help them feel pride and give them a sense of responsibility that will increase their motivation.

Besides motivating your people, your employees should be constantly trained in new practices and technologies. Remember, training is not a one-time effort. It is a consistent effort that needs to be carried out regularly.

**Step 5: Train your people to handle your customers well.**

Your employees need to be well-versed in the art of customer management. This means they should be able to understand what their customers want, and also know how to satisfy their needs. For them to truly understand this, they need to see how you deal effectively with customers. This is called leading by example. Show them how you sincerely listen to your clients and the efforts that you put into understand their requirements. Let them listen to the type of questions that you ask your clients so they understand which questions are appropriate.

**Step 6: Market your enterprise effectively.**

Use all your skills and the skills of your employees to market your enterprise in an effective manner. You can also hire a marketing agency if you feel you need help in this area.

Now that you know what is required to run your enterprise effectively, put these steps into play, and see how much easier managing your enterprise becomes!

**Tips**



- Get advice on funding options from experienced bankers.
- Be cautious and avoid borrowing more than you need, for longer than you need, at an interest rate that is higher than you are comfortable with.

### 10.6.7. 20 Questions to Ask Yourself Before Considering Entrepreneurship

1. Why am I starting a business?
2. What problem am I solving?
3. Have others attempted to solve this problem before? Did they succeed or fail?
4. Do I have a mentor<sup>1</sup> or industry expert that I can call on?
5. Who is my ideal customer<sup>2</sup>?
6. Who are my competitors<sup>3</sup>?
7. What makes my business idea different from other business ideas?
8. What are the key features of my product or service?
9. Have I done a SWOT<sup>4</sup> analysis?
10. What is the size of the market that will buy my product or service?
11. What would it take to build a minimum viable product<sup>5</sup> to test the market?
12. How much money do I need to get started?
13. Will I need to get a loan?
14. How soon will my products or services be available?
15. When will I break even<sup>6</sup> or make a profit?
16. How will those who invest in my idea make a profit?
17. How should I set up the legal structure<sup>7</sup> of my business?
18. What taxes<sup>8</sup> will I need to pay?
19. What kind of insurance<sup>9</sup> will I need?
20. Have I reached out to potential customers for feedback?

#### Tips



- It is very important to validate your business ideas before you invest significant time, money and resources into it.
- The more questions you ask yourself, the more prepared you will be to handle the highs and lows of starting an enterprise.

#### Footnotes:

1. A mentor is a trusted and experienced person who is willing to coach and guide you.
2. A customer is someone who buys goods and/or services.
3. A competitor is a person or company that sells products and/or services similar to your products and/or services.
4. SWOT stands for Strengths, Weaknesses, Opportunities and Threats. To conduct a SWOT analysis of your company, you need to list down all the strengths and weaknesses of your company, the opportunities that are present for your company and the threats faced by your company.

5. A minimum viable product is a product that has the fewest possible features, that can be sold to customers, for the purpose of getting feedback from customers on the product.
6. A company is said to break even when the profits of the company are equal to the costs.
7. The legal structure could be a sole proprietorship, partnership or limited liability partnership.
8. There are two types of taxes – direct taxes payable by a person or a company, or indirect taxes charged on goods and/or services.
9. There are two types of insurance – life insurance and general insurance. Life insurance covers human life while general insurance covers assets like animals, goods, cars etc.

## Notes

This image shows a full page of blank handwriting practice paper. It features 20 evenly spaced, light blue horizontal lines running across the width of the page. The lines are uniform in color and thickness, providing a guide for letter height and placement. There are no margins, text, or other markings on the page.



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