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Ministry of Labor and Skills

# Animal Health

# Level-III

# Based On March 2022, Version 4 Occupational Standard



# Module Title: - Conducting Animal Health Extension and Community Veterinary Service

# LG CODE: AGR ANH3 M09LO (1-3) LG (28-30)

# TTLM CODE: AGR ANH3 M09 TTLM 0523V1

**May 2023**

**Addis Ababa, Ethiopian**

# Table of Contents

**Introduction to the module ..... 1**

**Lo #1- Perform awareness creation and disease control at community level ..... 2**

Instruction sheet 1 ..... 2

Information sheet 1..... 4

Self-check – 1..... 28

**LO #2- Build a strategy on disease spread and advocate new technology..... 30**

Instruction sheet 2 ..... 30

Information sheet 2..... 31

Self-check – 2..... 36

**LO #3- Provide veterinary service to the community..... 38**

instruction sheet 3..... 38

Information sheet 3..... 40

Self-check – 3..... 46

**Reference materials ..... 47**

# Introduction to the module

This module covers the required knowledge, skills and attitude regarding to application of animal health extension and provision of veterinary community service during field attachment. It also covers skill and knowledge to improve community awareness on animal disease control and prevention, and to insure community participation. It also requires recording and reporting provided community veterinary services.

| Lg #28 | Lo #1- Perform awareness creation and disease control at community level |
|---|---|

**Instruction sheet 1**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Understanding of basic sociological norms
- Analyzing veterinary extension issues in the community
- Approaches of information dissemination for different community types
- Awareness creation program on disease

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Conduct and analyze community need assessment on veterinary extension issues.
- Identify and use the type of community of literacy level to select media of communication and approach
- Conduct awareness creation program at community level on locally prevailing disease.
- Deliver information on disease sources and transmission ways
- Explain importance of animal health care and early reporting of disease occurrence
- Describe locally available diseases that are economically destructive and those with zoonotic importance are
- Conduct participating community in the process of vaccination, mass treatment and crush construction.
- Carry out control of disease transmission resulting from mixing different herds of animals at grazing and watering points is by participating the local community.
- Use available pictorial, post card, diagram or other demonstrable materials indicating harmful effects of the disease on animal health and the economy of farmers in the process of participation for the control of diseases.
- Carry mobilization of community during national disease surveillance program

| **Learning instructions:** |
|---|
| 1. Read the specific objectives of this learning guide.<br>2. Follow the instructions described below and try to understand what are being discussed. Ask your teacher for assistance if you have hard time understanding them.<br>3. Read the information written in the information sheets<br>4. Accomplish the self-checks |

**Information sheet 1**

## Introduction

An awareness creation is effort to build public recognition of a problem through media, messaging, and an organized set of communication tactics. These campaigns target a large number of people over a specific period of time to try and generate specific outcomes or achieve pre-determined goals. Awareness creation and disease control in animals is an important topic. Public awareness campaigns on spotting the signs and symptoms of infectious diseases are vital in the fight against infectious diseases. In addition, awareness is needed to improve the behavior of livestock owners related to improving animal health to mitigate the disease risk, not only for the sake of their animals' health and welfare but also to protect humans from zoonotic pathogens.

## 1.1 Understanding of basic sociological norms

Norms generally are the rules and regulations that groups live by or norms as the standards of behavior of a group. For while some of the appropriate standards of behavior in most societies are written down, many of them are not that formal. Many are learned, informally, in interaction with other people and are passed "that way from generation to generation. An extension agent will be more effective if he understands the social and cultural background of the farmers with whom he/she works. He/she will then be better able to offer advice that fits in with the culture of the society; it is useful, therefore, examine the main features of societies and cultures that are relevant to extension work. As result any awareness creator should understand the following basic norms of society.

- Social culture: in all societies, there are accepted ways of doing things and these ways are directly related to the culture of the society. Farmers' attitudes and desires are influenced by their society's culture. In some communities, an unmarried man is expected to work on his father's farm; only when he marries will people expect him to start farming his own plot. Because most people like to feel acceptance and approval from those around them, they tend to behave in accordance with such expectations.

- Social structure: the structure of a society is the way it is organized into families, tribes, communities and other groupings or divisions. A person's attitudes, and people's expectations of that person, are influenced by the groups to which he or she belongs;
- social divisions: divisions within a society can be based on several different factors, including age, sex, religion, residence, kinship and common economic interest.

✓ **Age:** people of the same age usually have similar interests and attitudes. An extension agent needs to learn the particular aims, expectations and restrictions of different age groups in the society in which he works

✓ **Sex:** traditionally, in rural areas, specific tasks are done either by men or women. Usually, women are responsible for household jobs, such as cooking, collecting water and firewood or looking after children. However, in many countries, women also do a lot of farm work. In a number of African countries, over 60 percent of all agricultural work is usually done by women. Agricultural extension often concentrates on men, with male extension agents visiting male farmers. But any change in the way people farm will also affect the women, and thus may fail unless extension agents involve women in their programs.

✓ **Religion:** members of religious groups have common beliefs and attitudes, and these may influence their willingness to work closely with people of other religions. Religious differences can create tensions in a rural community the extension agent shoul d be aware of these.

✓ **Residence**: people who live close to one another usually have some interests in common. These common interests can unite the village, particularly if such interests are threatened. Where possible, extension agents should try to include in their program's activities which will unite the whole community in a common task.

✓ **Kinship:** the strongest groupings are often those based on relationships of birth and marriage within and between families. The smallest of these groupings is the family, which consists of a man, woman and children. In other societies, larger kinship groups may live together, own land in common or even take joint decisions about farming. When this happens, the individual farmer may have little freedom of decision. An extension agent would need to find out who are the leaders and decision-makers of such groups, and work closely with them.

## 1.2 Analyzing veterinary extension issues in the community

### 1.2.1. Introduction to veterinary extension

Extension is defined as a process that helps farmers become aware of improved technologies and adopt them in order to improve their efficiency, income and welfare. On the other hand, agricultural extension as an on-going process of getting useful information to the people and then assisting those people to acquire the necessary knowledge, skills and attitude to utilize effectively this information or technology to build a better life for themselves, their families and their communities. Livestock extension involves systematic and organized communication with livestock owners with a view to helping them in such a way that the livestock owners to help them form sound opinions and make good decisions. Veterinary extension as "practical and understandable advice given to individuals, groups, communities or populations about livestock diseases, and includes their prevention, treatment and ways in which they influence the well-being, health and productivity of both humans and animals.

### 1.2.2. Objectives of extension

- **General objective:** the general objectives of extension is to raise the standard of living of the rural people by helping them in using their natural resources like land, water and livestock in the right way. Rural people are helped in planning and implementation of their family and village plans for increasing agricultural production, improving existing village industries. It should also help in providing minimum health, educational and housing facilities for improving family living conditions in the village.
- **Specific objectives:** specific objectives of animal health extension are given here:
  - ✓ To develop the people
  - ✓ To disseminate the useful and practical information relating to animal health, including improved husbandry, health, vaccination, deworming, and improved health care practices
  - ✓ To apply practically the useful knowledge to farm and house
  - ✓ To help the members of the farmer's family to a larger appreciation of the opportunities, the beauty and the privileges of rural life and to know more about the environment in which they live.

- ✓ To improve all aspects of the life of the rural people within the framework of national, economic and social policies involving population as a whole.

### 1.2.3. Cardinal principles of agricultural extension service delivery

Any agricultural activity has the following basic principles

- Extension campaigns must be based on conditions that exist (local, regional and national)
- Extension workers must involve the people in actions that promote their welfare:
- They must aim basically at people's interests and needs using democratic methods
- They should keep programs flexible
- They should work with all members of the family and not just the animal owner they should make programs as broad as the needs of the people they should work through understanding of culture they should use local leaders
- They should use existing agencies
- They should use trained specialists

### 1.2.4. Prerequisites for agricultural extension service delivery

Effective agricultural extension service delivery requires the use of appropriate models and approaches that are tailored to the needs of farmers. Failure of agricultural extension service delivery can be attributed to poor extension delivery, low agricultural productivity, and inadequate funding. So, it has its own prerequisite and reason of failures. Agricultural extension service delivery should be boosted through timely recruitment, periodic training of agents and provision of adequate logistics.

The following are some of the major prerequisites for an effective and efficient agricultural extension service

- Collective extension needs assessment of stakeholders for a set period;
- Co-operation of stakeholders in collective planning of extension activities;
- Effective and efficient implementation of plans;
- Effective co-ordination of extension activities; and
- Effective and efficient monitoring and evaluation of all extension activities by knowledgeable and unbiased people.

On the other hand, agricultural extension activity may be hampered by different factors. The following are some of the reasons for agricultural extension activity may be fail:

- The heterogeneity of farmers being served
- lack of effective communication between senior and junior extension workers;
- Extension educators who have very different backgrounds;
- The urban or non-farming backgrounds of extension educators (they can therefore only advise and cannot "do");
- The fact that for many staff, a job with agriculture was not the first choice but was more the result of the lack of alternative job opportunities;
- Inadequate training of extension educators serving farmers (staff were trained in situations that were frequently academically weak and which tended to discredit local and traditional knowledge);
- Lack of clear vision and mission by state personnel;
- Lack of transport to do" field work" by state employee
- The poor state of offices that demoralizes and demotivate extension educators;
- Insufficient fund allocation to extension budgets, under-spending and appropriation of funds initially intended for agricultural extension to other activities that receive priority over extension.

1.2.5. Conduct and analyze community need assessment on veterinary extension issues

A needs assessment is a systematic process of gathering information that is used to plan effective programs or services. It involves identifying the needs of a particular community or group of people, and then developing strategies to address those needs. It is used to determine the gap between the current situation and the desired situation. The process involves collecting data from various sources such as surveys, interviews, focus groups, and observations. The data collected is then analyzed to identify the needs of the group or community. The results of the analysis are used to develop programs or interventions that address the identified needs. In the case of veterinary extension issues, a needs assessment would involve identifying the specific needs of the community related to veterinary care, and then developing programs or services that address those needs.

Need assessment has the following phases,

- **Phase one:** exploration, determine the purpose of the needs assessment. Identify the parameters for the assessment. Second, identify all of the existing information available that fits your parameters. Third, determine if other data still need to be collected.
- **Phase two:** assessment collect, analyze and synthesize all of the data. Implement your needs assessment plan.
- Phase three: utilization use the data to set program priorities, develop an action plan to address the needs or issues, evaluate the needs assessment, and communicate the results. A needs assessment process is not completed until the results are shared and utilized.

### 1.3 Approaches of information dissemination for different community types

extension approach as a style of action, embodying the philosophy of an extension system which, by and large determines the direction and nature/style of the various aspects of that system, such as its structure, leadership, program, methods and techniques. Eight extension approaches commonly practiced by extension organizations all over the world

**General extension approaches**: this approach assumes that technology and knowledge that are appropriate for local people exist but are not being used by them. If the technology is communicated to the farmer farm practices would be improve purpose: help farmers increase their production/ income through adoption of technology.

**Livelihood extension approach**: it is very well documented that livestock provided livelihood security to at least one fourth of our population.

**Group extension approach:** the extension approach needs to be changed from individual to group mainly because the decision making is shifted from individual to groups of producers. The development of sustainable farming practices often requires collective decision making, whereas extension in the past mainly supported individual decision making.

**Market driven approach:** it is being clear now that the adoption of technologies is market driven rather than technology driven. With the available technologies, it is not a problem to produce milk, chicken, meat, eggs or wool but it is very difficult to market these products due to lack of proper marketing infrastructure. Procurement, transportation and sale of livestock products are more difficult and complex than producing them.

**Entrepreneurial development approach**: it is well known that some farmers have got entrepreneurial abilities which enable them to try new methods of farming. Such entrepreneurs who are usually described as innovators exist in almost all social systems and skill of the extension personnel lies in identifying as well as encouraging such people to enter into new ventures of livestock development. The experiences of these pathfinders could be profitably utilized to upscale for wider use. It is necessary to identify such entrepreneurs, prepare success stories and give wide publicity through various mass media channels to enable the interested people to emulate them.

**Participatory approaches**: it is very well recognized that the farmers are considered as partners in development rather than as end users of technology. Evidence supports that it is beneficial to involve the livestock farmers in developing, adopting and evaluating the technologies. Many of the extension programs were not successful due to poor participation of farmers.

**Multi-disciplinary approach**: with the realization that the problems in the field are usually multi-dimensional which requires the expertise of different fields of knowledge, emphasis is being given to multidisciplinary approach in formulating as well as implementing the research projects. The livestock extension issues revolve around livelihood, livestock, women, social groups, markets, economics of production, policies etc.

**Farming systems approach**: farming system approach replaces the conventional single discipline based, commodity-oriented approach. The farming system approach considers the farm, the farm household and off-farm activities in a holistic way to take care not only of farming but also all aspects of nutrition, food security, sustainability, risk minimization, income and employment generation which make up the multiple objectives of farm households. For communicating an idea, experience or technology, extension worker uses audio-visual aids because audio-visuals help to communicate the message effectively and efficiently. Audio-visual aids are just tools or aids or vehicle for transfer of ideas, technology or message. The success depends upon the selection of right type of audio-visual aids at the right way. The materials that can be used for extension teaching and communication vary based on the type of technology, type extension approach, the economic status of the country, the sociocultural, available infrastructure and facility.

### 1.3.1 Veterinary extension methods

Extension methods refer to the techniques used by an extension system as it functions. The success of extension depends to a very great extent on the choice of suitable methods. An extension agent's

choice of any of the many methods available will depend on his or her specific goals and on the circumstances in which he or she works.

A. The individual/household extension method

An extension worker, interacting on one-to-one basis with the people, is utilizing an individual method. Through working individually with the clientele, the extension worker learns about the people of the area, how they think, what their needs are, and how they carry on their work. In addition, it provides the opportunity for the local citizens to get to know the extension worker so that the personal bond between the extension worker & the community can be established.

We can have several methods of individual extension. Some of these are

- Individual counseling of contact farmers and functionaries in client group organizations:
- Discussion with individual members of the client groups: the advisor can have discussion with individual farmers on an ongoing basis in order to:
- The extension talks: extension talks differ from a normal conversation, an enquiry, or an interrogation. It is always the client and his/her way of perceiving a problem that is the focus and starting point of the extension worker. We distinguish between formal and informal extension talks. Formal talks usually take place on the farm or in the advisor's office. The aim of these sessions is to isolate concrete problems and work out ways of solving them. In contrast there are informal contacts that can occur in numerous occasions, and the extension worker may well find this is the easiest way of getting to know the wishes and difficulties of client groups and of establishing contact with them.
- Individual extension on the farm: the extent to which discussion can take place in the fields or on the farm depends on the local conditions, the farmer's routines, the time of day or year, and the content of the counseling session.
- Individual extension by telephone and through letters or e-mail: meeting personally is absolutely necessary at the start of an advisor-client relationship. Later on, if a positive and trusting relationship exists, not every activity must involve personal contact. Where possible, shorter messages and standard information can also be transmitted impersonally, e.g., by letter, fax, e-mail or SMS.
- Individual extension in the market place or at religious places: being present at markets or near the church or mosque may make it easier for clients to approach the adviser.

- ✓ Advantages of the individual method:
  - Unclear messages that have not been fully understood can easily be clarified;
  - The extension officer is able to secure cooperation and inspire confidence in the family through personal contact;
  - It facilitates immediate feedback on the effectiveness of the measures discussed;
  - It may be the best way to ensure that everyone in the family participates in decision-making.
- ✓ Disadvantages of the individual method:
  - It is expensive in terms of time and transport;
  - Only a few farmers may be visited, and sometimes they may be mainly the extension worker's friends;
  - The area covered is small since all the effort is concentrated on a few farmers.

B. Group extension methods

By meeting people in-groups, it is assumed that an extension worker can contact & influence, more clients than by contacting them individually. This will improve cost effectiveness to the extent that it achieves more with the same resources or the same with fewer resources. This method involves working with groups or the community at large. It is suitable when discussing matters related to the whole community (such as postharvest grazing, protection, and management of indigenous forests) and when there are activities to be undertaken by a group (e.g., group nurseries). The direct target group may be a women's group, a church organization, a cooperative society or the community in general. Extension work can be carried out at meetings. Meetings are effective venues for receiving information from the community, for discussing issues of communal or individual interest and for spreading new ideas. Field days and demonstration are best organized on individual farms. In group extension work, several members of the client group who are linked by formal or informal ties are addressed at the same time.

- The advantages of group work are made clear by the following points.
  - ✓ A large number of farmers can be reached, even if the material and staffing provision of the extension service is limited.
  - ✓ There are definite time savings compared with individual extension work.
  - ✓ As reduced extension costs per head of the target group
  - ✓ Group methods permit more participants by the client group.

- ✓ Farmers exchange their views of a problem, their experiences and judgments, and this is more convincing than the same content coming from the advisor.
- ✓ Techniques of group dynamics can be used to accelerate the spread of information and increase the willingness of the farmers to make decisions.
- ✓ If the advisor does not express himself adequately, he is frequently "translated" by the members of the group.

- The disadvantages of group work are made clear by the following points.
  - ✓ the presence of conflict in group work
  - ✓ Inhibit their individual learning
  - ✓ increase stress levels.

Group extension work is therefore the most important method for advising and promoting the interests of a large number of farmers. The more it is supplemented by individual and mass extension, the greater are its chances of success. But group extension work is not always the best way of communicating particularly difficult and complex subject matters. Group discussion, demonstration, field day, excursions.

### 1.4 Awareness creation program

An awareness creation program is a type of program that aims to educate people about a particular topic or issue. The goal of such programs is to raise awareness and understanding among the public about the issue at hand. These programs can be used to promote health and safety, environmental protection, social justice, and many other issues.

#### 1.4.1 Awareness creation program on source and method of disease transmission

Disease is not a random event, and whether disease occurs depends upon interactions between the host, the agent and the environment in which they exist. Disease occurs when an agent capable of causing disease (for example, a virus or bacteria) meets a host that is vulnerable (susceptible) to the agent and in an environment that allows the agent and host to interact. For an outbreak to occur there must also be a chain of transmission for the agent to pass from one host to another. Whether a disease outbreak occurs will depend on factors relating to the host, the agent and the environment. The interaction between these three components is known as the disease triad.

**Modes of disease transmission:** the chain of transmission is the process by which an agent can be transmitted from a source to a susceptible host, and subsequently from one host to another. There are two types of disease transmission

- Direct: -direct contact between infected and susceptible animal
- Indirect: -vehicles, clothing, people, veterinarians' other animals feed, manure

For successful transmission to occur the following factors must exist:

- **Source of the agent**: this is often the place where the agent originates, lives, grows and multiplies. The source (sometimes called the reservoir) of an agent can be any of the following:
  - ✓ A symptomatic animal
  - ✓ An asymptomatic infected animal
  - ✓ An animal incubating disease
  - ✓ A convalescent animal
  - ✓ Another animal species
  - ✓ The environment
- **Portal of exit:** the pathway by which the agent leaves the source.
- **A mode of transmission**: the method by which the agent passes to a susceptible host. This transmission can be either direct /indirect and, for some agents, both pathways can be used.
- **Portal of entry**: the pathway into the host, which gives the agent access to tissues where it can multiply and cause disease.

1.4.2 Conducting awareness creation program at community level on locally prevailing disease.

Ethiopia has the largest livestock population in Africa, making a considerable contribution to the livelihood of Ethiopian people and to the wider economy. However, zoonotic diseases threaten the performance and potential benefits of this vast livestock sector. As a result, the country is vulnerable to the spread of zoonotic diseases. Forty-three zoonotic diseases were evaluated. Criteria selected in order of importance were:

- Severity of disease in humans,
- proportion of human disease attributed to animal exposure
- burden of animal disease
- availability of interventions
- Existing inter-sectoral collaboration.

Based on the results from the decision tree analysis and subsequent discussion, participants identified the following five priority zoonotic diseases: rabies, anthrax, brucellosis, leptospirosis, and echinococcosis and as over all the most economically important disease are the following.

- Common bacterial diseases
  a) Contagious bovine pleuropneumonia
  b) Brucellosis
  c) Bovine tuberculosis (btb)
  d) Anthrax
  e) Leptospirosis
  f) Salmonellosis
- Common viral diseases
  a) Foot-and-mouth disease (fmd)
  b) Rabies
  c) Lumpy skin disease (lsd)
- Common parasitic diseases
  a) Echinococcosis
  b) Taeniasis
  c) Trypanomosis
  d) Fasciolosis
  e) Trichienellos

**1.5 Conduct community participating in the process of vaccination, mass treatment and crush construction.**

**Participation** is the empowerment of people to find solutions to their own development challenges. It is both an attitude and a philosophy that encourages learning, discovery and flexibility.

**A community mobiliser** is an individual or leader who interacts with various groups of people (such as households, school children, community groups, community-based organizations, and religious groups) to influence knowledge, attitudes, and practices. Specific types of community mobilisers include:

**Community mobilization**: in this phase, the mobiliser uses the agreed upon approach to engage the audience to discuss the manifestation, causes, and consequences of food insecurity and malnutrition. The outcome of the mobilization activity should be a community action plan that:

- Identifies the problem
- Determines tasks to address the problem assigns responsibility for respective tasks sets a timeframe for each task
- Determines signs of success

**Participatory appraisal (pa**) is a family of approaches and methods that enable people to present, share and analyze their knowledge of life and conditions, to plan and to act. It is participatory, flexible, lightly structured, adaptable, exploratory, empowering and inventive. Types of participatory appraisal include rapid rural appraisal, participatory rural appraisal (pra), farming systems research and participatory impact assessment.

### 1.5.1 Role of community animal health workers

**Community animal health workers (cahws)**: - community animal health workers (cahws) are community members who have received basic, non-formal training in animal health care. They engage in the prevention and treatment of animal diseases and provide basic services and give husbandry advice to livestock keepers. They provide basic services and give husbandry advice to livestock keepers. They are in charge of disseminating certain farming techniques and methods in order to optimize animal production and play an important role in epidemiological surveillance. The primary role of community animal health workers is the following:

- Create a baseline of animals in the area
- Manage livestock registers (annual counting of randomized sample)
- Give advice regarding medicines and vaccines
- Bulk buy medicines and sell to farmers
- Maintain the vet kit for that particular dip
- Maintain a recording system of treatments, dosage and interventions
- Keep farmers updated on vaccination calendars and strategic medicinal interventions (e.g., anthrax, blackwater vaccination campaigns)
- Provide basic animal health care at dip-tank level
- Assist in disease surveillance (early detection)
- Promote animal identification through tattoos, ear tagging and branding
- Provide grazing management skills towards feeding during winter bottlenecks
- Provide support around breeding and selection skills
- Provide the service of castration and dehorning
- Mobilize farmers around marketing and value adding
- Mobilize farmers to provide animals at times of sales or auctions

- Surveillance and reporting of controlled diseases
- Provide supportive role to departmental technicians on dip days and veterinary campaigns
- Provide theme day trainings at dip days and other gatherings

1.5.2 Carry out control of disease transmission at grazing and watering points by participating the local community.

The use of shared common water points (WPS) and grazing points (GPS) provides more contact opportunities for animals. Watering points are critical for the potential transmission of infectious diseases, intervention at gps in the Ethiopian highlands may have greater impact on contacts and thereby opportunities for transmission of infectious diseases between flocks. Some villages appear naturally at much lower risk of introducing disease. Grazing tends to be communal during the dry season and individual during the rest of the year with owners grazing the animals on their own land. Little is known about the contact structure of the farming population in developing countries, but it is likely to be complex and heterogeneous as a result of the need for continuous adaptation to variable environmental, socioeconomic, and institutional conditions.

Mixing at watering points (wps) or grazing points (gps) has been identified as a key factor for transmission of diseases such as rinderpest, peste des petits ruminants (ppr) or foot-and-mouth disease (fmd). Control programs using animal movements in intensive farming systems. However, the characterization of networks of animal contacts in settings without registered animal movements and structured animal contacts remains a challenge in terms of field network data collection and knowledge about the husbandry system. Therefore, disease prevention and control at grazing and watering point achieved by the following methods:

- Use separate and clean watering area for animals
- Control the movement of animals
- Use separate grazing area for different animals
- Separate diseased animal early from the rest healthy flock/herd minimize the population of animal at watering points
- Check the quality of water
- Create awareness to the community about the risk of common watering and grazing areas

- Avoid shared routes within and between villages during going to watering and grazing points.
- Reduce high livestock congregations
- Vaccination at these key points.
- Mobility of infected animals may be impacted in ways that change contact risks

1.5.3. Using different types of diagrams to indicate health effects of disease

**Pie chart** (or a circle chart) is a circular statistical graphic, which is divided into slices to illustrate numerical proportion. In a pie chart, the arc length of each slice (and consequently its central angle and area), is proportional to the quantity it represents. While it is named for its resemblance to a pie which has been sliced, there are variations on the way it can be present.

**Anthrax in cattle**

Even though the overall prevalence of anthrax based on expert opinions is generally low, the total economic cost of the disease reaches used 162.86 million of which two-third is from the mixed-crop livestock system. Much of the loss (~90 percent) is attributed to immediate death of the affected animals. The total losses as percent of contribution of livestock to GDP and total GDP are 0.85 percent and 0.09 percent, respectively.

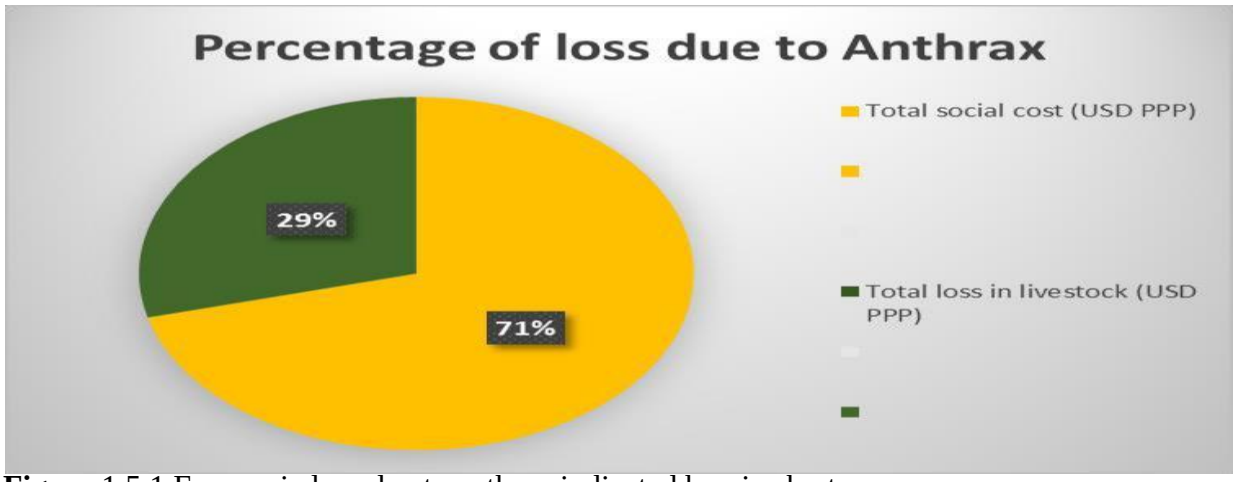



**Figure** 1.5.1 Economic loss due to anthrax indicated by pie chart

**A histogram** it indicates the frequency of a class interval. The class interval or the range of values is known as bins or classes with reference to histograms. A bar indicates the number of data points within a specific class. That means the higher the frequency of a particular class, higher the bar.

**A diagram** is a symbolic representation of information using visualization techniques. Sometimes, the technique uses a three-dimensional visualization which is then projected onto a two-dimensional surface. The word graph is sometimes used as a synonym for diagram.

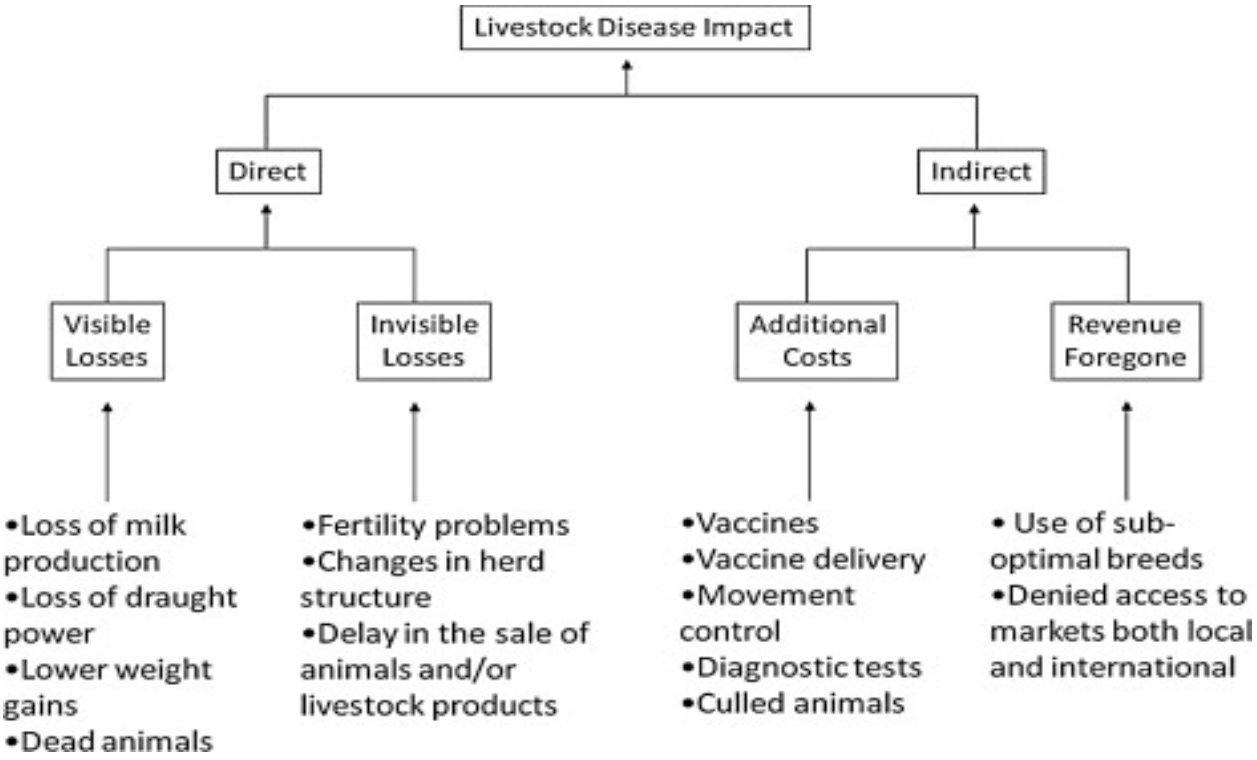



**Diagram 1.5.1 Impact of animal disease on livestock production**

**Pictorial:** pertaining to, expressed in, or of the nature of a picture. Illustrated by or containing pictures: a pictorial history of or relating to the art of painting and drawing pictures, the pictures themselves, or their makers: the pictorial masterpieces of the renaissance.

### 1.5.5. Importance of animal health care and early reporting of disease occurrence

Introduction

Along with the suffering of animals themselves, animal diseases devastate some of the world's poorest communities and damage international trade. Preventing and controlling diseases Grows

economies, bolsters local communities, and improves the health of vulnerable populations, especially the young and elderly. The diseases that affect animal health also affect human. Tackling them while they are present in animals not only safeguards our health, it is easier, more effective and less expensive to address. Global disease prevention, management and control efforts must recognize the interdependent relationship between animal and human health an approach known as 'One Health.' This ensures healthcare researchers and practitioners in both areas work hand-in-hand to prevent disease outbreaks across species and address the root cause of their spread. This has led to the successful management of deadly diseases like avian flu, and is being used to eliminate others in the future.

Surveillance comprises monitoring the whole population to identify the occurrence, incidence and prevalence of disease. When assessing the level of disease in a population, prevalence describes the number of animals affected with a disease at any one time, while incidence is the number of new cases which occur in a given time period. These two measures are linked by the duration of the disease event. Monitoring each animal in the shelter is an important support to the daily rounds process and dramatically improves the likelihood that signs of problems will be identified early.

Timely detection and rapid appropriate response to newly emerging diseases, changing endemic diseases and incursions of trans-boundary diseases that will: minimize the effect of these diseases on livestock production systems Strengthen rural economies by minimizing the effect of these diseases Enhance food security by minimizing the effect of unintentional and intentional (Agro-terrorist) introduction or emergences of these diseases Improve access to markets for animals and their products Improve public health Improve consumer confidence in the safety of animal derived food products resulting in enhanced markets for these products and strengthened rural economies Improved security of food production continuums by mitigating the risk of the introduction of bio-terrorist agents

Early detection or diagnosis of a disease has great importance in the life of any animal/person. If diagnosed at an early stage some diseases can be cured fully or certain disease state can be reversed. Treatment also becomes easier, the quality of life is preserved, and the risks associated with the disease are prevented. Early detection of infectious diseases plays a crucial role in all treatment and prevention strategies. The key to success in handling animal disease epidemics is

early detection. If a disease can be detected very early in the phase of epidemic development, the possibility exists that it can be arrested and eliminated before it actually inflicts damage. Early detection presupposes that there is a surveillance system in place that will bring infection to light when it is first seen. The country's veterinary authorities are then placed in the position of being able to manage the problem before it becomes uncontrollable, thus protecting the local livestock industry and ensuring food security for those closely dependent upon livestock. Early detection enables early warning and an early reaction. Surveillance is the primary key to effective disease management.

1.6. Mobilization of community in national disease surveillance program

**A community mobiliser** is an individual or leader who interacts with various groups of people (such as households, school children, community groups, community-based organizations, and religious groups) to influence knowledge, attitudes, and practices.

Specific types of community mobilisers include:

- Community Development Officers/Workers Parish Development Committees
- Functional Adult Literacy Instructors
- Group Promoters
- Community-Based Facilitators
- Village Health Teams
- Any other influencer

**Community mobilization:** In this phase, the mobiliser uses the agreed upon approach to engage the audience to discuss the manifestation, causes, and consequences of food insecurity and malnutrition. The outcome of the mobilization activity should be a community action plan that:

- Identifies the problem
- Determines tasks to address the problem
- Assigns responsibility for respective tasks
- Sets a timeframe for each task
- Determines signs of success

**Disease surveillance**: is an epidemiological practice by which the spread of disease is monitored in order to establish patterns of progression. The main role of disease surveillance

is to predict, observe, and minimize the harm caused by outbreak, epidemic, and pandemic situations, as well as increase knowledge about which factors contribute to such circumstances. A key part of modern disease surveillance is the practice of disease case reporting.

1.6.1. Methods of community-based disease surveillance

**Participatory disease surveillance**: is a method of disease surveillance where PA approaches and methods are used to combine local veterinary knowledge with conventional methods to establish the presence or absence of a specific disease in a particular area. In community animal health outreach (CAHO) the method of sampling is usually purposive rather than random. The investigator uses outbreak reports and risk factors to determine the target areas for participatory disease surveillance (PDS); areas most likely to harbor the disease are chosen. As the PDS is carried out and information is gathered, the investigator will follow the information to places that are likely to have the disease of interest. The investigator makes contact with livestock keepers, farmers and key informants who are likely to know about the local disease situation. Livestock keepers and the investigator discuss together about animal health issues. Livestock keepers' knowledge and experience (existing veterinary knowledge) is listened to and respected. A range of tools and methods are used that are open-ended and flexible, and can be used to crosscheck information gathered.

**Participatory epidemiology (PE)** is the use of participatory methods to collect epidemiologic data. The participatory approach utilizes and compares all available information through a process called triangulation. Triangulation refers to the confirmation of information using multiple methods and multiple sources. Participatory epidemiology makes full use of sampling, laboratory testing and analytical techniques. Participatory studies provide the proper background for the design of statistical studies and the contextual information that is essential to the correct interpretation of laboratory results. In order to fully integrate participatory methods in surveillance systems three important activities are required

- Discussion of the value of participatory data leading to a consensus on its appropriate use,
- Training courses in participatory methods for veterinary staff and

- Workshops to develop comprehensive frameworks for disease reporting that mobilize

**Integrated Surveillance Methods**: Effective surveillance systems are sensitive, specific, timely and representative. No one surveillance activity can meet all these requirements. Only an integrated system of complementary methods can. Participatory epidemiological methods and community animal health networks are beginning to be integrated as part of routine disease reporting systems. But so far, the potential benefit of these approaches in terms of enhancing the sensitivity of event detection has only been exploited in the most superficial manner. Community animal health project staff routinely debrief community animal health workers as to their activities and the types of diseases they encounter. Up to the present, conventional veterinary services have made little use of the information. The reservation is frequently expressed that international authorities would not recognize the data obtained through participatory methods. One of the objectives of the present paper is to advance the discussion and begin to solicit the opinion of the international community regarding methods adapted to traditional production systems.

| Self-check – 1 | |
|---|---|

Name_____ ID_____ Date_____

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Part I. Write true if the statement is correct/False if it is incorrect (1 point each).

1) Extension is “Process that helps farmers become aware of improved technologies and adopt them in order to improve their efficiency, income and welfare”.
2) Veterinary extension could be defined as imparting relevant, practical, and focused elementary veterinary knowledge and skills to farmers and other members of the Communities
3) Zoonotic diseases threaten the performance and potential benefits of this vast livestock sector.
4) Anthrax that has acquired global significance seriously affect the livestock sector in the country.
5) The prevalence of many endemic diseases in farm animals is too high and shows high sign of reduction over time.

Part II. Choose the best answer for the following questions (1 point).

1. Which one of the following is the stakeholders on veterinary extension issues

A. Veterinary Services Support Projects
B. International and local NGs
C. Mister of Agriculture
D. Federal and regional veterinary laboratories
E. All of the above

2. According to the Ethiopian livestock master plan which one of the following diseases does not include in the three most important diseases

A. Foot-and-mouth disease (FMD),
B. Contagious bovine pleuropneumonia (CBPP) and
C. Brucellosis
D. Ringer pest

3. Which one of the following is not public delivery institutes for extension services?

A. National Animal Health Institute
B. National Tsetse fly and Trypanosomiasis Investigation and Control Centre
C. National Animal Health Diagnostic and Investigation Centre (NAHDIC)
D. National Artificial Insemination Centre.
E. None of the above

Part III. Short Answer Questions (1point)

1. What are the reasons for the failure of agricultural extension service delivery?
2. What are the basic sociological norms that should be accepted when we deliver animal health extension service most societies around the world?
3. Describe and discuss source and transmission path ways of diseases.

Note: Satisfactory rating - 11 points Unsatisfactory - below 11points

You can ask your teacher for the copy of correct answers

| LG #29 | LO #2- Build a strategy on disease spread and advocate new technology |
|---|---|

**Instruction sheet 2**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Empowering the community in prevention strategies of disease spread
- Participatory Rural Appraisal (PRA) strategy in disease prevention
- Advantage of integrated and small-scale farming
- Integrating indigenous knowledge for transfer of new technology.
- Adding value chain on livestock and livestock product

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Empower the community in prevention of disease spread to new area is performed by early warnings and with prevention strategies
- Use Participatory Rural Appraisal (PRA) strategy in habituating disease prevention strategy.
- Explain advantage of integrated and small-scale farming
- Transfer integrating community indigenous knowledge in of new technology.
- Deliver information on adding value chain on livestock and livestock product

**Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks

**Information sheet 2**

Introduction

There are several strategies that can be used to control the spread of diseases. One way is through genomic surveillance of pathogens with pandemic and epidemic potential. Genomic surveillance is the process of constantly monitoring pathogens and analyzing their genetic similarities and differences. It helps researchers, epidemiologists and public health officials to monitor the evolution of infectious diseases agents, alert on the spread of pathogens, and develop counter measures like vaccines. Another way is through application of Digital health technology can facilitate pandemic strategy and response in ways that are difficult to achieve manually including surveillance, testing, contact tracing, and strict quarantine which could be associated with the early flattening of their incidence curves.

## 2.1 **Empowering the community in prevention strategies of disease spread**

The animal disease prevention and control activities of veterinary services throughout the world are a global public good. These activities have major benefits for agricultural production, food security and safety, public health, animal welfare, access to markets and alleviation of rural poverty. The effectiveness of prevention and control policies depends on the good governance and quality of the Veterinary Services.

### 2.1.1. Training the community in prevention of disease spread

Animal health status and related health behaviors are determined by influences at multiple levels: personal, organizational/institutional, environmental, and policy. Because significant and dynamic interrelationships exist among these different levels of health determinants, educational and community-based programs are most likely to succeed in improving animal health and wellness when they address influences at all levels and in a variety of environments/settings. Educational and community-based programs play a key role in:

- Preventing disease and injury to animals
- Improving health of animals and human
- Enhancing quality of production
- Boost the economy of the farmers

2.1.2. Ensuring that women and herdsmen have access to livestock extension services

Although women, children and young people of the world over are known to play a key role in livestock production, including animal healthcare, they have limited access to extension services. Most extension programs, especially in pastoral livestock production systems, mainly reach out to men or 'household heads', leaving out herdsmen, women and children, despite the fact that they play an influential role in the provision of veterinary services. Veterinary extension services should focus not only on household heads, but must also take into account all those involved in livestock management, nutrition and animal healthcare. Farmers should be given extension specific on how disease prevented and controlled and the application / implementation of the learned extension knowledge. Considering extension given by the state employees regarding parasites should include the following:

- How to recognize the different parasites disorders associated with high worm burdens,
    - ✓ Types of anthelmintic used to control worms
    - ✓ How to read, understand and follow the instructions on stock remedies, when to treat cattle for internal worms and the various methods used;
    - ✓ Side effects of incorrect use of anthelmintic in cattle, namely toxicity and drug resistance;
    - ✓ methods of disease prevention and control
    - ✓ Advantage of hand and personal hygiene
- Training on animal husbandry system
- Feeding and watering
- Housing
- Ventilation
- Geography

- Proper record keeping.
- Importance of fencing animal environment Importance of biosecurity
- Importance of monitoring and surveillance of animal diseases

## 2.2 Participatory Rural Appraisal (PRA) strategy in disease prevention

In recent years, an increasing number of analyses of projects have shown that participation by local people is one of the critical components of success in irrigation, livestock, water, and agriculture sectors. The terms "people's participation" and "popular participation" have now become part of the normal language of many development agencies. Participation has often centered on encouraging local people to sell their labor in return for food, cash, or materials. Yet these material incentives distort perceptions, create dependencies, and give the misleading impression that local people are supportive of externally driven initiatives.

If the objective of development is to achieve sustainable development, then nothing less than functional participation should suffice. Participatory rural appraisal (PRA) is an approach used by governmental, NGOs and other agencies involved in international development. PRA refer to “a family approach. The approach aims to incorporate the knowledge and opinions of rural people in the planning and management of development projects and programs. This was followed by a rapid growth in the development of methods that involved rural people in examining their own problems setting their own goals, and monitoring their own achievements. To ensure that people are not excluded from participation, these techniques avoid writing wherever possible, relying instead on the tools of oral communication like pictures, symbols, physical objects and group memory. It encourages empowerment and decentralization. Empowerment means that people, especially poorer people, are enabled to take more control over their lives, and secure a better livelihood with ownership and control of productive assets as one key element. Decentralization and empowerment enable local people to exploit the diverse complexities of their own conditions, and to adapt to rapid change.

The three basic pillars of PRA

- The behavior and attitude of outsiders, who facilitate rather than dominate
- The methods, which are open, group-oriented, visual and comparative
- Sharing of information, food, experiences, etc. between in- and outsiders

2.2.1 Approaches, Methods and principles of participatory appraisal

PRA entails shift of emphasis from:

- Dominating to empowering Closed to open
- Individual to group
- Verbal to visual
- Measuring to comparing,
- ranking and scoring
- Frustration to fun

Key principles of participatory appraisal

- **Behavior and attitude**: Listen, learn and respect. Be open-minded. Be a facilitator, not an expert.
- **Co-learning**: Share knowledge, experience and analysis. Combine local and professional knowledge for effective, acceptable action. Be prepared to unlearn.
- **Understanding**: People make rational decisions based on the information available to them. If it appears that people are not behaving rationally, it is probably because we have failed to understand some key factors in the situation.
- **Existing knowledge:** People accumulate a body of knowledge on subjects that are important to their livelihoods. Certain individuals have unique and very valuable perspectives on situations
- **Optimal ignorance**: Do not need to know every possible detail of a problem in order to solve it.
- **Action-oriented** rather than data-driven.



**Figure 2.1:** Participatory appraisal

## 2.3. Advantage of integrated and small-scale farming

2.3.1. Definition of Integrated Farming System (IFS): -

Integrated farming system is a sustainable agricultural system that integrates livestock, crop production, fish, poultry, tree crops, plantation crops and other systems that benefit each other. Integrated Farming System (IFS) also defined as biologically integrated farming system which integrates natural resources and regulation mechanisms into farming activities to achieve maximum replacement of off-farm inputs, secures sustainable production of high-quality food through ecologically preferred technologies, sustain farm income, eliminates or reduces sources of present environment pollutions generated by agriculture and sustains the multiple function of agriculture. It is based on the concept that 'there is no waste' and 'waste is only a misplaced resource' which means waste from one component becomes an input for another part of the system. IFS approach is considered to be the most powerful tool for enhancing profitability of farming systems especially for small and marginal farmers to make them bountiful. this farming system has the following main objectives and components

- Objectives
    - ✓ Efficient recycling of farm and animal wastes

- ✓ Minimizing the nutrient losses
- ✓ Maximizing nutrient use efficiency
- ✓ Adoption of efficient cropping systems and crop rotations
- ✓ Complementary combination of farm enterprises.

- Components of Integrated Farming System (IFS)
  - ✓ Piggery
  - ✓ Poultry
  - ✓ Dockery
  - ✓ Fishery
  - ✓ Plantation crops
  - ✓ Apiary
  - ✓ Mushroom Cultivation
  - ✓ Vermicomposting
  - ✓ Fruit cultivation

Advantages of Integrated Farming System (IFS): -

- Profitability: Produce/waste material of new enterprise can be used for other enterprise at least for crop, thus reducing the cost of production and increasing profitability per investment
- Productivity: Integration of crop and allied enterprises helps to increase economic yield per unit area per unit time. Intensification of cropping and allied enterprises in space and time dimension found to increase the productivity.
- Sustainability: Huge quantity of inorganic fertilizers, pesticides, herbicides are required to meet the food requirement of increasing population @ 2.2 % every year. Abundant use of such material causes soil degradation and pollution. The productivity of soil gets drastically reduced in due course of time. IFS provides an opportunity to sustain production through organic supplementation and effective utilization of byproduct of linked components.
- Balanced food: -IFS link varied nature of enterprises to provide nitrous food viz vitamins, proteins, carbohydrates, fat, minerals etc. from the same area. This solves the malnutrition problem of poor peoples.
- Environmental safety: Abundant use of inorganic fertilizers, pesticides, herbicides make the soil, water and environment polluted. Similarly, residues of some crops, waste material also pollute the environment after decomposition. However, in IFS waste material, byproducts of one composite are effectively recycled using for other component and by-

product of that component as organic manure to enrich the soil. Use of bioagent or crop protection also minimizes the pesticides.

- Recycling of waste: - By-product of the crop husbandry can be effectively recycled for preparation of compost. Some of the by-product can be used as feed. This reduces the cost of production of one enterprise at the cost of other. Thus, net income of farm is increased.
- Saving energy: - Energy crises can be served to same extent by utilizing organic waste to generate biogas which can be used for cooking, lighting etc.
- Adoption of new technology: - Big farmers are fully aware with the new technologies because of using improved varieties, package of practices. But small and marginal farmers are not able to adopt for want of money. In IFS linking of cropping with dairy, mushroom, sericulture, floriculture there is a flow of money throughout the year.
- Money round the year: - In conventional farming income is expected once at the end of cropping season. However, IFS provides flow of money round the year by way of disposing eggs, milk, edible mushroom, honey, cocoons of silkworm etc.
- Availability of fodder, fuel and timber: - IFS utilizes every part of land. Growing off odder trees on border will not only provide fodder but also enrich the soil by fixing atmospheric nitrogen. In multistoried cropping includes of fodder component like cowpea as second or third tier also meet the fodder crises. The current production of fuel wood is about 20 million ton which needs to be increased to eighteen folds.
- Employment round the year: - Crop-livestock integration increase labor requirement through the year, other activities like mushroom cultivation, sericulture, apiculture also needs labor. Hence IFS provides employment to family members as well as outside labor throughout the year.
- Agro-industries: - Linking of various components in IFS, the production definitely increased to commercial level. Surplus production leads to development of Agro based side industry.
- Increase input efficiency: - IFS provides better scope to use available inputs more efficiently. This leads to increase benefit: cost ratio.
- Standard of living: - IFS leads to produce milk, eggs, fruits, honey, edible mushroom and generate bioenergy for farmers family and commercial purpose. There is regular flow of money at frequent interval throughout the year.

- Avoid degradation of forest: - There is a vast gap between demand and production of fuel wood and timber. Users encroaches/destroy the forest area to bridge the gap. Forest lands get degraded and eroded due to denudation of forest. IFS linked with Afforestation and provide safety against degradation of lands, besides supplementation of fuel, timber and fodder.



**Figure 2. 2**: integrated farming system

- Advantage of small-scale farming

Farming systems can be roughly divided into large scale (highly mechanized and energy intensive systems managed as corporate Agri -businesses) and small-scale farms, which employ family labor and use limited external inputs. In the small systems, a closer integration of the different components, recycling and optimized use of local resources can enhance productivity. Intensive subsistence farming is the growing of crops and rearing of animals on small scale for subsistence purposes for example growing cereal crops like cassava and beans for domestic consumption.

The following are advantages of small-scale farming or intensive subsistence agriculture

- Source of employment opportunities leading to the high standard of living
- Development of infrastructure that is rural feeder roads
- Source of government revenue through taxation

- Use of family labor which is cheap
- Use of a small piece of land
- Leads to the promotion of economic diversification reducing the problem of over depending on the economic sector
- It needs low capital and low skills to manage
- Provide a market for industrial products e.g., fertilizers, pesticides, and hoes
- Environmental protection by providing habitats for plant and animal species
- Development of tourism sector for example rice growing in india and China
- Source of food for the farmer's families
- It can lead to the development of Agro-based industries like maize milling plants and dairy industries
- Source of foreign exchange through export of crops like coffee and cotton

**2.4. Integrating indigenous knowledge for transfer of new technology.**

2.4.1. Indigenous Knowledge definition and bets examples ways of capturing

Indigenous knowledge, (traditional or local knowledge), refers to the large body of knowledge and skills that has been developed outside the formal educational system. IK is embedded in culture and is unique to a given location or society. It is the basis for decision-making of communities in food, security, human and animal health, education and natural resource management. More and more communities and organizations around the world are realizing the value and significance of Indigenous knowledge and the importance of preserving it for future generations. The capture and preservation of Indigenous knowledge is being used to revitalize endangered cultures, improve the economic independence and sustainability of Indigenous communities and to increase community-based involvement in planning and development. In parallel with the increasing recognition of the value and relevance of Indigenous knowledge to today's world and the need to preserve it, is recognition of the role that information technologies (IT) can play in its capture, management and dissemination.

Indigenous knowledge encompasses many forms. It includes cultural heritage in the form of traditional stories, songs, dances and ceremonies that reflect beliefs related to spirituality, family, land and social justice. It includes potentially patentable knowledge about traditional medicines, foods, farm practices, architecture and construction, handicrafts, artwork and folk music. It includes knowledge about people, places, plants, animals, and historical events associated with a particular community.

2.4.2. Ways of indigenous knowledge capturing

a) Digital libraries for traditional Medicine capturing: A number of countries are using information technologies to develop digital libraries of traditional knowledge both to use the knowledge in current community projects and also to prevent misappropriation of the knowledge through commercial patents. It will provide a uniform system for organizing, disseminating and retrieving traditional knowledge seamlessly across regions or countries. Accessible via the internet, the library will initially contain information on traditional medicine including:
   - ✓ Materials used for treatment, e.g., plants, animal products, minerals Their generic or specific method of preparations or designs
   - ✓ Their dosage, mode and time of administration, and their therapeutic action or application.

b) Indigenous Knowledge and Cultural Centers (IKCs) for Local knowledge bases capturing: Many Indigenous communities are developing local Indigenous Knowledge bases either informally or within Indigenous Knowledge and Cultural Centers (IKCs) established specifically for this task. The digital content being assembled and presented within these IKCs is either captured locally, donated or repatriated from external private and public collections belonging to museums, church archives, community members, anthropologists, missionaries, and others. Determining the optimum software solutions to support such knowledge bases requires an analysis of the communities' needs and objectives.

c) The Indigenous Knowledge Management (IKM) software system: The IKM (Indigenous Knowledge Management) system was designed as a low cost, simple robust system to enable Indigenous communities to manage their own digital collections within local Indigenous knowledge bases. Traditional livestock husbandry is of great socio-economic importance for farmers and pastoral populations. Indigenous knowledge is characterized as the sum of experience and knowledge for a given ethnic group, which forms the basis for decision making in regard to familiar and unfamiliar problems and challenges. It can play key role in designing of sustainable farming systems including animal husbandry practices thereby increasing the likelihood that rural populations would accept, develop and maintain innovations and interventions. For ages, human beings, in particular, the resource poor farmers and marginal societies around the world, have been utilizing locally available plant resources for formulating a wide range of plant based herbal medicines for treating animal diseases as an economical, accessible, efficacious and ecologically sustainable means to animal health care practices. It is hardly surprising that due to these reasons, the domain of traditional veterinary knowledge has attracted a considerable amount of interest amongst scientific community, extension workers and development agencies in recent times.

d) Indigenous Knowledge in Veterinary medicine: The application of indigenous knowledge to treat animal diseases is also known as ethno-veterinary medicine, defined as an indigenous animal healthcare system that includes the traditional beliefs, knowledge, skills, methods and practices of a given society. The study of traditional Ethiopian cures is of major importance. Such treatment is culturally preferred by large sections of the population. Thus, its development on modern scientific lines is desirable to:

- ✓ Understand Ethiopian medical history
- ✓ Seek useful cures;
- ✓ Foster national dignity and self-reliance;

Develop local initiative and industry generating rural wealth; and Provide access to medicines accepted by the rural communities. The Afar people are one of the major ethnic groups raising camels that Livestock keepers have well-established traditional veterinary practices often neglected and considered `primitive'. In parts where conventional veterinary practices

are limited, the traditional healers are consulted. A survey in central Ethiopia, where conventional animal health is relatively better, indicated that 41% of the farmers have frequently utilized traditional veterinary medicine. A Chinese veterinary team from Bahir Dar regional veterinary laboratory between 1974 and 1976 reported 22 kinds of traditional preparation used to treat 33,384 animals. The report also indicated the effectiveness of metered (Glinus lotoides) against Moniezia, sheep tapeworm. The effectiveness of pumpkin seeds against sheep tapeworm (Moniezia expansa). In recent years, ethnoveterinary medicine research is well recognized among different institutions such as the Faculty of Veterinary medicine in Bishoftu, the National Animal Health Research in Sebeta and the Biodiversity Institute.

## 2.5. Adding value chain on livestock and livestock product

### 2.5.1. Introduction on value chain

**Value Chain** is the pathway of processes that a product follows as it moves from the primary producer to the final consumer. In principle at least, value is added at each stage of the chain, hence the term “value chain”. Value addition is determined by the market and is not necessarily increased by processing or physical transformation. “Value added” means adding value to a raw product by taking it to, at least, the next stage of production.

C**ustomer value**” reflects the relationship between the benefits customers receive from and the price they pay for a product. The more benefits relative to the price, the higher the customer value. This does not necessarily mean that greater value results from a low price. The price of a particular product may be high, but if the associated benefits are high as well, the customers perceive value in the product. This interaction creates customer value and, thus, the opportunity to add value to your product. Creating customer value is critical in building a profitable and substantial business. However, one must bear in mind that it is the customers’ perception of value, not the producers’, that is critical.

**An animal product**: is any material derived from the body of an animal. Examples are fat, flesh, blood, milk, eggs, and lesser-known product like rennet.

**Animal by-products:** Animal by-products (ABPs) are defined as entire bodies or parts of animals, products of animal origin or other products obtained from animals which are not

intended for human consumption. Animal by-products are a potential source of risks to public and animal health.

**Value**" is usually created by focusing on the benefits associated with the agribusiness product or service that arises from:

- Quality: Does the product or service meet or exceed customer expectations?
- Functionality: Does the product or service provide the function needed of it?
- Form: Is the product in a useful form?
- Place: Is the product in the right place?
- Time: Is the product in the right place at the right time?
- Ease of possession: Is the product easy for the customer to obtain?

**Value-added product** -To take advantage of value-added opportunities, one must know and understand customers.

- What consumer segments might want your product?
- What are the benefits desired by these potential customers?
- What criteria are they looking for when purchasing?
- Writing these down as part of a business plan is an important first step in beginning a value-added agribusiness.

**Advantages of value-added processed livestock products**

- It prevents the risk of spoilage of raw produce and can be stored at room temperature for prolonged period of time
- Can provide a variety of convenient, ready to prepare and ready to eat products which can satisfy the need of the present-day consumers at reasonable price.
- Provides opportunities for better utilization of different by-products.
- During period of excess production versus reduced selling of fresh perishable livestock produce like meat, milk and egg, the same can be processed for value addition to less perishable products, store them, and sell them later in greater quantities.
- Processed livestock products can be sold at markets present at a greater distance.
- Contribute to efficient marketing of milk, meat and egg
- Promotes employment and entrepreneurship development
- Enhances the export potential and can compete with imports.

- Provides sufficient return to the farmers.

2.5.2. Steps to Success in Value Added

Building a new business is difficult and takes hard work (nothing new for farmers and ranchers). But, for all the uncertainty, there are ways to craft a successful value-added business strategy. The key factors in a detailed business plan are:

- Operations plan: flow of the business, quality and cost control
- Personnel plan: needs, skills and training
- Sales plan: including challenging but realistic goals
- Management plan: evaluate strengths, weaknesses and resources
- Investment and financial plan: cash flow planning

Development of a value-added product depends mainly on three major inputs –

- Technical knowledge about the development of the product.
- Market demand of the product.
- Economics of the preparation of the product.

Besides these the farmer should follow the four "P" concept i.e., product, place, price and promotion to become successful in getting sufficient profit by selling the value-added products. Before deciding to prepare any value-added product, the farmer has to survey the market where he is going to sell his produce. He should collect the information about the consumers for his product, their purchasing capacity, the demand for the products, their literacy status, the existing sellers of the proposed production that area etc. Accordingly, the farmer has to decide the type of product to be prepared by him.

2.5.2.1 Value addition to milk

Dairy farmers can produce a wide variety of processed milk products to add value to their raw milk. They can process the raw milk to prepare the following items. These include:

- They can ferment the milk to produce curd.
- Milk fat can be separated from other milk solids to produce skim milk, butter and ghee.
- Milk can be fermented to produce cheese with whey as a byproduct.
- Whey can be used to prepare whey drink.

- Milk can be pasteurized which has a great demand by the consumers rather than fresh and raw milk.
- Flavored milk can be prepared.
- Milk can be processed to prepare khoa, chhana, paneer, ice cream, lassi etc.

2.5.2.2 Value addition to meat

In different developed countries, nearly 60% of the meat is processed for value addition and capturing the export market while in India, it is around 2% only which signifies a great scope for this sector in our country. The purpose of value addition in meat are as follows:

- To provide a variety of consumer-based meat products in market
- To sustain increased demand from consumers in market meeting lifestyle requirement
- To efficiently use animal carcasses with proper and economic utilization of different by-products
- To combined and complement different meats with advantage
- To incorporate several ingredients of non-meat origin for enhancing quality and economy
- To facilitate export of quality meat products and compete with imports
- To promote various start-up entrepreneurship ventures and employment.

2.5.2.3. Value added to fish product

Different processing methods, like salting, drying and smoking, to increase shelf life and diversify products are used across continents, regions and countries. Processing helps reduce food loss and waste, thus reducing the pressure on the fisheries resources, and fostering sustainability of the sector. Processing often results in quantities of by-products, such as heads, bones, guts, and shells. To minimize food loss and waste in the fish value chains and, at the same time, improve fish waste management strategies, several methods can be used to convert by-products into value added products: animal feed ingredients (fishmeal and fish oil), biofuel and biogas, dietetic products (chitosan), pharmaceuticals (omega-3 oils) and constituents in other industrial processes. Other popular products include fish leather, fish silage and fertilizer.

Fish silage is produced from the whole fish or parts of it, to which acids, enzymes or lactic acid-producing bacteria are added. The fish silage process transforms fish waste into a liquid mix of hydrolyzed proteins, lipids, minerals and other nutrients, easily digestible by both terrestrial and aquatic animals. Fish silage can be a viable alternative to fish meal as an abundant animal protein source for the manufacture of rations for domestic animals. Furthermore, it can also be an excellent fertilizer.

Value added fish products may be i) mince or mince-based products, ii) battered and breaded or coated products and iii) surimi-based products. Fish mince or minced fish is the flesh separated from the fish in a comminuted form free from scales, skin and bones. The fish is often gutted and washed before preparation of mince. The fish mince finds application in processing several ‘convenience foods’, some of which are discussed below. Advantage of mince-based product is that it conceals identity of the original fish from which it is made and consumers may not hesitate to accept mince or mince-based products even though the original fish would have been unacceptable as whole fish. A batter can be defined as a liquid mixture composed of water, flour, starch and seasoning in to which food products are dipped prior to cooking. The breading is normally a bread-based crumb, but other coating like small potato chips or puffed grain such as rice also are popular. Surimi is a Japanese term for mechanically deboned fish mince from white fleshed fish that has been washed, refined and mixed with cryoprotectants for better frozen shelf life because of its high gel strength, surimi is used as intermediate in processing several value-added products with stimulated texture, flavor and appearance.

| Self-check – 2 | |
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Name_____ id_____signature_____ date_____

**Directions:** answer all the questions up on the instruction

Part I. Write true if the statement is correct/False if it is incorrect for the following questions (5point each).

1. Capturing and preservation of Indigenous knowledge is being used to revitalize, improve the economic independence and sustainability of Indigenous communities.
2. IK is embedded in culture and is unique to a given location or society.
3. Value added means adding value to a raw product by taking it to, at least, the next stage of production.
4. Value is usually created by focusing on the benefits associated with the agribusiness product or service
5. The main principle of integrated farming system is to reduce pollution and increase income by combining different types of farming.

Part II. Choose the best answer for the following questions (6 point).

1. The IK library initially contains information on traditional medicine including:

A. Materials used for treatment, e.g., plants, animal products, minerals
B. Their generic or specific method of preparations or designs
C. Their dosage, mode and time of administration
D. Their therapeutic action or application.
E. All of the above

2. Value is usually created by focusing on the benefits associated with the agribusiness product or service that arise from:

A. Quality
B. Functionality

C. Form
D. Place
E. All of the above

3. Which one is the advantage of integrated farming system?

A. Soil remains fertile for a long time due to the correct use of organic waste.
B. Integrated farming system ensures influx of income.
C. The amount of waste is minimized
D. All of the above

Part III. Short Answer Questions (12 point)

1. Write the methods of preserving indigenous knowledge.
2. Discuss briefly the advantages of value-added processed livestock products.
3. Discuss the advantage of small-scale farming.

**Note: Satisfactory rating – 14points Unsatisfactory - below 14 points**
You can ask you teacher for the copy of the correct answers.

| Lg #30 | LO #3- Provide veterinary service to the community |
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**instruction sheet 3**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identification of working area and need of veterinary services
- Preparation of supportive document needed for field work Provision of community veterinary service
- Monitoring and evaluation of community veterinary service
- Recording and reporting community veterinary service
- OHS and safety measures

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify the type of veterinary service and work area Based on community need assessment,
- Identify and prepare Supportive document for field work approved by relevant body to facilitate the implementation of field work attachment.
- Perform Veterinary community service provision for specific period of time.
- Identify and consider information associated with the geographical location, available veterinary services facilities, culture and taboos during community veterinary service provision period.
- Identify, record and report service provide for community based on institution guideline and format.
- Support, supervise, monitor and evaluation Community veterinary service provision based on institution guideline.

| **Learning instructions:** |
|---|
| 1. Read the specific objectives of this learning guide.<br>2. Follow the instructions described below.<br>3. Read the information written in the information sheets<br>4. Accomplish the self-checks |

**Information sheet 3**

## 3.1. Identification of working area and need of veterinary services

Veterinary Services make a critical global contribution to food security, nutrition, poverty alleviation and resilience, given the number of poor rural communities that rely on animals for their economic livelihoods and as a food source. The workplace of a veterinarian can vary greatly depending on their specific area of practice. Veterinarians can work in a variety of settings, such as private clinics, animal hospitals, research facilities, zoos, and even farms.

a) **In a private clinic or animal hospital,** the veterinarian typically works in an exam room or treatment area, where they conduct physical exams, diagnose illnesses, and perform surgical procedures. They may also have an office where they can review medical records, communicate with clients, and manage the business aspects of the clinic. In research facilities.

b) **Zoos and aquariums:** Zoo veterinarians work in zoological parks or aquariums, where they are responsible for the health and welfare of the animals in their care. They may conduct regular exams and administer preventative care, diagnose and treat illnesses, and perform surgeries or other procedures as needed. Keeping captive animals in good shape involves a lot more than replicating habitats. Zoos and aquariums hire staff veterinarians to ensure creatures stay healthy, but these medical professionals are also heavily involved in things like conservation efforts and public education. Positions in zoos and aquariums are good options for veterinarians who have above-average observation skills. This is because, according to Veterinary Practice News, wild animals have keen survival instincts that typically prevent them from showing signs of weakness.

c) **Food-processing plants:** Veterinarians can work in settings all along the food supply chain, including factories that process animals and animal products. Their jobs may involve ensuring animals are treated humanely, enforcing regulations, testing for drug residues, and evaluating facility conditions. The work they do helps reduce foodborne illness and improve the lives of food animals.

d) **Farms and ranches**: Veterinarians who work with farm animals often travel to various locations to provide medical care and consult with farmers on issues related to animal health and production. They may work with a variety of species, such as cows, pigs, and chickens, and may be responsible for managing herd health and treating individual animals as needed. Vets who specialize in large animals spend a good amount of time on farms and ranches treating cows, pigs, sheep, and more. In addition to treating conditions and implementing preventative measures, these veterinarians may also be involved in livestock breeding. Large-animal veterinarians spend a substantial amount of time traveling to different locations, so it's a particularly good role for those who don't mind road trips.

e) **Colleges and universities:** Tomorrow's great animal doctors require qualified instructors to help them acquire the skills and knowledge they'll need to succeed. Veterinarians who have been through the process themselves can fill that role by teaching students who are pursuing their Doctor of Veterinary Medicine (DVM) degree. Vets involved in teaching may also instruct other medical professionals or scientists. Research may be another component of a veterinary medicine teaching position, but it doesn't necessarily have to be. This depends on the school's focus and a faculty member's interest.

f) **Laboratories:** veterinarians often work in laboratories, where they conduct experiments and research to advance animal health and medicine. Working in a lab is typical for those involved in research, as well as veterinarians who work specifically with lab animals. A lab animal veterinarian's responsibility may include providing regular veterinary care for lab animals, monitoring disease control programs, serving on committees involved in animal care and use, and conducting research. Other veterinarians pursue careers in biomedical research, working toward solutions that can improve both animal and human health. Their specific responsibilities are usually dependent upon advanced training in fields like toxicology and microbiology.

g) **Animal shelters:** While animal shelter medicine is relatively new, those who pursue a career in this field play an important role in keeping pets healthy. They work specifically with pets in need of permanent homes. Though these veterinarians may perform many of the same tasks as private practice vets, their role is focused on both individual and population care. Shelter veterinarians also face some unique challenges, such as not knowing an animal's health history.

h) **Racetracks**: Some equine veterinarians healthcare professionals who work with horses choose to work exclusively with racehorses. Their work involves collecting samples for drug testing, tending to injuries, and monitoring the animals and facilities. They help ensure horses stay healthy, but also strive to maintain a level playing field. Because so much of their work is focused around events, racetrack veterinarians spend a lot of their time outside at racing facilities.

### 3.2. Preparation of supportive document needed for field work

A supportive document for field work is a document that provides support for the field work being carried out. It can be a document that outlines the objectives of the field work, the methodology that will be used, and the expected outcomes. It can also include information on the equipment that will be used, the safety procedures that will be followed, and any other relevant information.

### 3.3. Provision of veterinary community service

Community service is work done by a person or group of people that benefits others. It is often done near the area where you live, so your own community reaps the benefits of your work. You do not get paid to perform community service**,** though sometimes food and small gifts, like a t-shirt, are given to volunteers. Community-based veterinary medicine describes veterinary clinic models that offer services and interventions for un deserved or marginalized communities. Access to veterinary care in underserved communities is a long-neglected topic that is finally beginning to gain wider attention within the veterinary and animal welfare fields. The use of low- price and community veterinary clinics in underserved populations is a strategy to improve companion-animal health through preventative care, spay/neuter, and other low-price care programs and services.

Veterinary services fall into four main categories: clinical services (treatment injured or diseased animals and control of production limiting disorders through Consultation of animal farm on heath management issues); preventive services (avoiding the outbreak of diseases, Vaccination and deworming of animals); Provision of AI and pregnancy diagnosis in animals and human

health protection(Inspection of food of animal origin like in abattoir, dairy farm, poultry farm and Community awareness creation on the prevention of zoonotic diseases (veterinary public health)

### 3.4. Monitoring and evaluation of community veterinary service

Monitoring and evaluation of community veterinary services is important to ensure that the services are effective and efficient. The monitoring and evaluation process can help identify areas that need improvement and help to make informed decisions about the allocation of resources. The following are some steps that can be taken to monitor and evaluate community veterinary services:

- Define the objectives of the service.
- Identify the indicators that will be used to measure progress towards the objectives.
- Collect data on the indicators.
- Analyze the data to determine if progress is being made towards the objectives.
- Use the results of the analysis to make decisions about how to improve the service.

### 3.5. **Recording and reporting community veterinary service**

Veterinary patient records provide a contemporaneous record of the veterinary management of an animal. They serve as an important basis for review and evaluation of veterinary care and are essential for the continuity of care of the patient. Content of a veterinary patient record include Attachment letter for relevant body, work schedule, report forma, case reporting format, evaluation check list. It requires records to be patient-centric and expects the following details to be recorded:

- Identification of client and patient
- Signalment
- Date of entry and identification of the veterinarian
- Presenting problem

- Relevant history
- Physical examination findings – a comprehensive physical examination is expected to be recorded by body system to the extent relevant to the veterinary management of the patient.

  - ✓ Basic objective parameters from a physical examination should be recorded – the minimum expected is body condition score and/or weight, heart rate, respiratory rate, temperature, mucous membrane color and capillary refill time.
  - ✓ The use of eye, dental and skin charts is recommended.

Patient records should not be changed. If you realize at a later point that they are factually inaccurate an amendment should be added. Any correction must be clearly shown as an alteration, with the date the amendment was made and the veterinarian's name.

### 3.6. OHS and safety measures

Veterinary medicine and animal care workers provide medical, surgical, preventive health or animal care services for a variety of animal species in many different workplace settings. These workers are exposed to biological, chemical, physical, and psychological hazards depending on their workplace setting, species of animals worked with, and type of tasks performed. There for those workers should:

- Develop and implement a comprehensive written workplace-specific safety and health program.
- Review and update the written safety and health program periodically.
- Document and maintain staff records of training, immunizations, and work-related injuries and illnesses.
- Comply with Federal and State occupational hazard laws.
- Comply with relevant Federal, State, and local laws such as proper veterinary waste management and disposal.
- Inform all workers and volunteers about potential workplace hazards.
- Promote safe work habits including best infection control practices.
- Have a medical surveillance system in place to record and report workplace-related injuries and illnesses.

- Ensure that equipment is maintained and operated safely.

In addition, they should apply the following ohs principles and lifesaving methods

- Elimination: remove the hazard from the workplace.
- Substitution: switch to the use of a less risky hazard
- Administrative controls: implement changes in work practices and management policies e.g., require rabies pre-exposure vaccination for workers at risk
- PPE: use gloves, safety eyewear, masks, hearing protection, respirators, or other protective equipment e.g., require the use of hearing protection in an animal shelter with barking dog.

| Self-check – 3 | **Written test** |
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Name_____ Id_____Signature_____ Date_____

**Directions:** answer all the questions below according to the instruction

**Test i: write true for correct statement and false for incorrect one (1pt each)**

1. Record keeping is an essential component of effective disease management.
2. Community service is work done by a person or group of people that benefits others.
3. Veterinary Services make a critical global contribution to food security, nutrition, poverty alleviation and resilience

**Part II short answer questions (2pts each)**

1) List the four main categories Veterinary services
2) What are the benefits of keeping records as a beekeeper?

**Note: Satisfactory rating – 9 points** **Unsatisfactory - below 9 points**
You can ask you teacher for the copy of the correct answers

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# Acknowledgement

Ministry of labor and skills wish to extend thanks and appreciation to the many representatives of tvet instructors and respective industry experts who donated their time and expertise to the development of this teaching, training and learning materials (ttlm).

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