



**Ethiopian TVET System**



## **Animal Production Level-II**

**Training Module –Learning Guide 14-16**

**Based on Version 3 March 2018**

### **Occupational Standard (OS)**

Unit of Competence: Assist basic husbandry practice  
of poultry

Module Title: Assisting basic husbandry practice of  
poultry

TTLM Code: AGR APR 2 TTLM05 0919v1

October 2019



# **Module Title: Assisting basic husbandry practice of poultry**

**TTLM Code: AGR APR 2 TTLM05 0919v1**

This module includes the following Learning Guides

LG14: Prepare for poultry raising activities

(LG Code: AGR APR2 M05 L01 LG14

LG15: undertake poultry raising activities.

(LG Code: AGR APR2 M05 L02 LG15

LG16: . Handle and clean materials and equipment.

(LG Code: AGR APR2 M05 L03 LG16



<b>Instruction Sheet</b>	<b>Learning Guide 14</b>
--------------------------	--------------------------

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

- Identifying required materials, tools and equipment
- Checking materials, tools and equipment and report faulty items
- Using correct manual handling techniques when loading and unloading
- Selecting and checking Suitable Personal Protective Equipment (PPE)
- Following the OHS requirements

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to –

- Identify required materials, tools and equipment
- Check materials, tools and equipment and report faulty items
- Use correct manual handling techniques when loading and unloading
- Select and check Suitable Personal Protective Equipment (PPE)
- Follow the OHS requirements

#### **Learning Instructions:**

1. Read the specific objectives of this Learning Guide 14.
2. Follow the instructions described in number 1 to 6.
3. Read the information written in the “Information Sheet (1, 2, 3, 4 and 5) in page 2,6,8,10 and 12 respectively
4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the “Self-check 1, Self-check t 2, Self-check 3, Self-check 4, and Self-check 5” in page, 5, 7, 9, 11 and 15 respectively.
6. If you earned a satisfactory evaluation proceed to “the next topic”. However, if your rating is unsatisfactory, see your teacher for further instructions or read back the Learning guide information sheets 1-5. Submit your accomplished Self-check. This will form part of your training portfolio.



Information sheet-1	Required materials, tools and equipment for poultry raising activities.
---------------------	---

## 1.1. Definition of terminologies

**Poultry:** refers to all birds kept for the production of eggs and meat for human consumption and for their feathers.

**Layers:** chickens raised to be egg-layers

**Broilers:** chickens kept for meat production

**Chicks:** young chicken between 0-8 weeks

**Pullets:** female chickens in their first year of lay, or prior to their first molt

**Hens:** female chickens in their second year of lay, or after their first molt

**Cockerels:** young male chicken before sexually matured

**Cock:** sexually matured male chicken used for breeding purpose

**Rearing** is the care of chicks from about eight weeks of age to the point they begin to drop eggs, i.e. point of lay.

**Egg :** a hard shelled oval thing from which a young bird is born.

**Candling** is a process of examining fertile eggs against a strong beam of light preferably emerging through a small hole or a narrow slit

**Incubation:** the management of fertilized egg to ensure the satisfactory development of the embryo inside it into a normal chick. It may be achieved by the natural method, with the hen sitting on eggs, or by using special machines known as incubator

**Hatching:** - the bringing forth of young chicks from the egg by natural or artificial incubation

**Brooding** is the process of caring for young chicks from day-old to eight weeks of age.

**De-beaking/Beak trimming:** a practice which involves partial removal of the points of the beak to prevent vice habits such as pecking, feather-pulling, cannibalism and egg eating.

**Feed** is a mixture of feedstuff blended/processed in a form which is acceptable to animals. It is merely the carrier of nutrient and potential energy in a ration.



## 1.2. Role of Poultry production

- Poultry meat and eggs are essential foods. And poultry is appetizing and popular as the meat and eggs are highly digestible and nutritious
- The income from poultry keeping is distributed throughout the year.
- They are useful for religious, recreation and game purposes.

## 1.3. Site selection criteria

In planning a poultry farm the most important points to considered are:

- Well-drained land, this is especially important where litter systems are used.
- Within sight of owner / supervising personnel.
- Away from other chicken houses to reduce the spread of diseases.
- Noisy areas should be avoided.(garage ,railway and road)
- The housing of the house should take advantage of natural air movement
- No direct sunshine entering the house, placing the house in an east-west direction is best.
- Accessible to transport and communication

## 1.4. Identifying required materials, tools and equipments for poultry raising activities.

Materials, tools and equipment used for poultry raising activity may include;

- Bedding materials – are materials used in poultry house for covering the floor to overcome moisture and heat stresses. These are: Old newspaper Saw dust, Rice hulls coffee pulp and etc.
- Disinfectants:- are chemical substance that is used to kill harmful germs and bacteria: a substance used to disinfects something.
- Feeds
- Litter materials: are materials used as a bedding for animals and/ or used to absorb the urine and feces of animals
- Generator: a machine that produces electricity
- Heater: a device that imparts heat or holds something to be heated.
- Electric lamps: a device that produce light.
- Incubator: a device that is used to keep eggs warm before they hatch.
- Weighing scale: an instrument or machine used for weighing.



- Pail: a usually cylindrical container with handle.
- Wheel barrow: a cart with two handles, large bowl and usually one wheel that is used for carrying heavy loads
- Feed bin: a box that is used for storing or keeping of feeds.
- Feed cart: a heavy usually horse drawn 2 wheeled used for farming or transporting things.
- Plastic drinking jars: are plastic materials used for watering chicks
- Waterer and feeder
- Egg trays: are thin, flat, and often rectangular piece of plastic, wood, etc that are used for holding or carrying of eggs.
- Infrared gas brooder: are materials used for producing rays of light during brooding
- Debeaker: is a manual or electrical materials used to cut the beak of bird to prevent cannibalism.
- Feed cart Fabricated layer cages: a box made up of wire, or metal bars in which people keep feed of birds
- Knapsacks sprayer: is a material used to spray liquid materials usually disinfectants
- Egg grader: is a material used to measure the quality of eggs
- Feed scoop: are something that are shaped like bowl or bucket used for pickup poultry feed
- Hover: material that float in air without moving in any direction during heat supply.
- Chick guard: plastic, metal sheet or wood used to keep chickens in one area cohesively and protect them
- Curtains: hanging materials used to cover window to protect the entry of air, light and etc
- Rake: equipment used to for gathering of waste materials from poultry house
- Shovel equipment used to for gathering of waste materials from poultry house
- Spade- equipment used to for digging and gathering of waste materials from poultry house
- Drenching guns is an instrument used to provide liquid drugs.
- Dressing equipment: a piece of cloth used to cover a wound.



- Portable coolers: movable materials that is used for cooling in poultry farm..
- water pump: is material used to pump water from its source
- Waste disposing equipment – materials used for disposing of waste, dead chicken, contaminated feed etc. away from poultry farm.



<b>Self-Check -1</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down the necessary materials used as a bedding poultry house? (4 points)
2. Mention 8 materials and their use. (8 points)

**Note: Satisfactory rating - 12points                      Unsatisfactory - below 12 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1.
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
2.
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_





<b>Information sheet-2</b>	<b>Check all materials, tools and equipments with insufficient or faulty items</b>
----------------------------	--

### **2.1. Check all materials, tools and equipments**

Finding the right materials, tools and equipments among different items is the most critical aspect in poultry raising activity. All the items should be checked before utilization for their

- safety; right material,
- no damage and
- Appropriate amount for a specific activity.

### **2.2. Report insufficient or faulty items**

Damaged, broken, and material which are not fit for poultry raising should be identified and reported to the responsible person in time.



<b>Self-Check -2</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What type of materials and equipment should be reported to the responsible body? (9 points)

**Note: Satisfactory rating – 9 points                      Unsatisfactory - below 9 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1.. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



### 3.1. Use correct manual handling techniques during loading and unloading

Loading and unloading facilities are a critical in the process of transport. When loading materials care should take not to break and make damage the items. Appropriate handling of materials, tools and equipments to minimize damage self, others, load and vehicle. Suitable training will normally need to be given on correct lifting, Loading & techniques of materials & poultry.

During loading and unloading of materials, tools, equipment and poultry the following points should be considered:

- Poultry should be healthy and in good condition while transporting
- Separate different classes of poultry (day old, pullet, layer...) during transport.
- Isolate diseased or suspected poultry during transportation.
- Heavier materials should be loaded at the bottom of the vehicle.
- Flammable material should be given a precaution.
- When loading different material the same material should be loaded at the same sides
- Use ramps when loading and unloading of materials, tools and equipment.

Procedures for loading & unloading materials:

- Properly design loading/unloading areas
- Park vehicles and conduct loading/unloading only in designated loading/unloading areas
- Clean loading/unloading areas regularly to remove potential sources of pollutants.
- Reduce exposure of materials to rain.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.
- Inspect equipment regularly
- If possible, conduct loading and unloading in dry weather.



<b>Self-Check -3</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are points to be considered during loading and unloading of materials, tools, equipment and poultry? (12pts)

**Note: Satisfactory rating – 12 points      Unsatisfactory - below 12 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Information sheet-4	Selecting and checking suitable personal protective equipment
---------------------	---

#### 4.1. Select suitable personal protective equipment.

There are different types of materials, tools and equipments and supplies to perform different activities in poultry raising activity. Therefore, identifying, selecting, using and preparing facilities, supplies according to the working activity are very important aspect in poultry work.

Personal protective equipment include

- Overalls
- Gloves
- Safety goggles
- plastic boots/shoes
- Sunhats
- Respiratory musk
- Aprons,

Protective clothing should be selected to prevent skin contact with contaminated materials or environments. Consideration should be given to the type of work being performed by the worker when selecting personal protective clothing.



<b>Self-Check -4</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down PPE used in poultry raising (6pts)
2. Write the advantages of using suitable PPE.(4pts)

**Note: Satisfactory rating – 10 points      Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

1

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

2

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



<b>Information sheet-5</b>	<b>Following OHS requirements</b>
----------------------------	-----------------------------------

### 5.1. OHS Hazards in raising poultry

Personnel working in the poultry industry are permanently exposed to hazards. These have either a physical, chemical or biological nature. Proper management is needed to avoid accidents and to keep the staff motivated..

According to the International Labor Organization (ILO), health hazards in poultry working environments are categorized as accidental, physical, chemical, and biological. Here are just a few examples for each category mentioned by this organization

#### 5.1.1. Physical

- Exposure to high levels of noise.
- Long-time exposure to heat and cold.
- Skeletal I problems resulting from lifting and moving of animals, feed bins (bags), egg collection.

#### 5.1.2. Chemical

- Respiratory problems resulting from exposure to dust, which is composed of feathers, dander, micro-organisms, etc.
- Respiratory, skin, and eye diseases due to exposure to gaseous chemicals.(e.g. NH<sub>3</sub>, H<sub>2</sub>S, CO<sub>2</sub>, CO, and CH<sub>4</sub>).
- Exposure to disinfectants, detergents, formaldehyde and pesticides.

#### 5.1.3. Biological

- Zoonotic infections. These diseases are transmitted between birds and humans & they also are transmitted from animals to humans and include bacterial, viral, fungal, and parasitic diseases. Salmonellosis, campylobacteriosis, chlamydiosis, tuberculosis, Newcastle Disease, and avian influenza are amongst the most common zoonotic diseases transmitted from poultry to humans. Poultry workers are at a greater risk of being affected by these diseases

### 5.2. OHS requirements



Work task is provided according to Occupational Health and Safety (OHS) requirements. This may include:

- Using of relevant protective clothing and equipment,
- Use of tooling and equipment,
- Creating conducive working environment and safety handling of material,
- Using First aid kit to provide aid services
- Hazard control and hazardous materials and substances.etc,
- Following Occupational health and safety procedure designated for the task
- Checking and fulfilling required safety devices before starting operation





<b>Self-Check -5</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down the three types of hazards (3pts)
2. Write the Occupational Health and Safety (OHS) requirements in work place.(7pts)

**Note: Satisfactory rating – 10 points      Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

- 1**
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- 2**
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_



## References

- CAB International 1987, Manual on poultry production in the tropics Wallingford, Oxon, United Kingdom
- French, K.M. 1984, Practical Poultry Raising Peace Corps, Trans- Century Corporation, Washington D.C.
- G.C Banerjee (2000) A text book of Animal Husbandry. 8<sup>th</sup>ed Oxford & IBH publishing CO. Pvt.ltd, New Delhi / Calcutta, India



<b>Instruction Sheet</b>	<b>Learning Guide 15</b>
--------------------------	--------------------------

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

- Following supervisor instructions and directions
- Undertaking poultry raising activities in safe and environmentally appropriate manner

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Follow supervisor instructions and directions
- Undertake poultry raising activities in safe and environmentally appropriate manner

### **Learning Instructions:**

7. Read the specific objectives of this Learning Guide 15.
8. Follow the instructions described in number 1 to 6.
9. Read the information written in the “Information Sheet (1, 2, and 3) in page 2,4 and 11 respectively
10. Accomplish the “**Self-check 1, Self-check 2 and Self-check 3**” in page, 3, 10 and 12 respectively.
11. If you earned a satisfactory evaluation proceed to operation Sheet 1-3 in page13 and 4, 5 in page 14 respectively.
12. Do the “LAP test” in page 15 (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work



<b>Information sheet-1</b>	<b>Following supervisor instructions and directions</b>
--------------------------------	---

### **Following Instructions and directions provided by supervisor**

Instructions and directions provided by supervisor are followed and clarification is sought when necessary. Any employee who works in industry which raises poultry or any farmer who raises his own stock must follow the following instruction and direction:-

Enterprise policies and procedures

Manufacturer instructions

Material safety data sheets (MSDS)

The MSDS is a detailed informational document prepared by the manufacturer or importer of a hazardous chemical. It describes the physical and chemical properties of the product.

MSDS's contain useful information such as:

- Flash point,
- Toxicity,
- Procedures for spills and leaks and
- Storage guidelines.

Information included in a Material Safety Data Sheet aids in the selection of safe products, helps you understand the potential health and physical hazards of a chemical and describes how to respond effectively to exposure situations

OHS standards and procedures

Specifications for tools, equipments and materials

Standard Operating Procedures (SOP)

It is a set of step-by-step instructions compiled by an [organization](#) to help workers carry out complex routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing [miscommunication](#) and failure to comply with [industry regulations](#)

Verbal directions from manager or supervisor

Work instructions and standards

Work notes.



Instructions and directions provided by supervisor must be followed and if we have any question we can ask when necessary. And also employee must observe and follow Enterprise policies and procedures in relation to workplace practices in the handling and disposal of materials



<b>Self-Check -1</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down 5 instructions and directions provided by supervisor to be followed by an expert in poultry raising (5pts)
2. Write the useful information contained in material safety data sheet.(5pts)

**Note: Satisfactory rating – 10 points      Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

3.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

4.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



<b>Information sheet-2.</b>	<b>Undertaking poultry raising activities in safe and environmentally appropriate manner</b>
-----------------------------	--

## **2.1. Cleaning and disinfecting poultry shed**

Majority of the disease in poultry farm are raised from improper cleaning and disinfecting

### **I. Cleaning**

The first requirement for good hygiene is effective cleaning.

### **II. Disinfection**

During disinfecting the poultry farm the following important points should be considered. These are:

- They should kill all pathogens.
- Should not be poisonous to birds and persons operating.
- With minimum of corrosive action on poultry equipment.
- Should be long lasting.
- Easy to use and must be cheap.
- No irritating or objectionable smell or bleaching effect.

Factors affecting the action of disinfectants

1. Concentration: follow manufacturer's directions.
2. Time of application.
3. Temperature: important in the tropics since disinfectants work best with warmth.
4. Presence of organic matter, faeces and other protein materials counteract the activity of disinfectants.
5. Distance

## **The Recommended types of disinfectants**

### **A. Formaldehyde (formalin and potassium permanganate)**

It is in gaseous state used for fumigation of hatchery.

### **B. Caustic soda (soda lime)**

Use a 2% solution in water. Since it corrodes most materials, its use should be limited to serious virus disease situation.

### **C. Chlorine**

Use 1% solution of chlorine quaternary ammonium compounds  
it is effective when used as a 1% solution in water.

## **2.2. Selecting layers**



During selection of layers the following features are considered. Some of them are:

- Should lay many eggs
- Should be free from broodiness characteristics
- Start laying early
- Have small body size (1.5-2.5Kg)
- Small amount of feed intake (110gm/head/day) as they are small in size
- Have good feed efficiency to convert in to egg

## Feeding poultry

The feed, which the chicken consumes, is composed of the following different nutrients: water, carbohydrate, fats, proteins, minerals, and vitamins. Each of the nutrients in feeds serves a particular purpose

Pullet growth initially most sensitive to dietary protein and amino acids where as energy intake becomes more critical as the bird approaches maturity. Energy intake may be the limiting factor for growth of egg strain birds .Manipulation of energy intake is there for best considered in relation to feeding management and in particular method of stimulating feed intake. Minute quantities of vitamins and minerals should be added for the well being of the layer because deficiency may cause a drop of egg production.

Kinds of feed

Chicks: A ration that is fed up to the age 8 weeks.

Growers: A ration to be fed to growing chicks 8 to 20 weeks or until laying commences.

Layers: A ration to be fed to laying birds 20 weeks on ward or after lying commences.

Broiler starter: is fed from day-old until 4 weeks of age.

Broiler finisher: is fed from 5 weeks until market

### 2.3. Undertaking debeaking

De-beaking (beak trimming) is the cutting of the points of the beaks. It needs precision and must be done very carefully. When there is bleeding wound must be cauterized. It causes enormous stress to the birds and for this reason everything must be done to reduce stress before, during and after de-beaking.





Age at de-beaking: Opinions differ as to the best time for de-beaking. In general the younger the bird the less stress the de-beaking causes.

### **Required care at de-beaking**

- Cut beaks in appropriate size,
- don't burn tongue of birds,
- don't cut with junk or very slowly,
- check for bleeding after de-beaking,
- Provide sufficient feed in feeders immediately.

### **2.4. Egg selection criteria**

- Eggs that weigh medium weight are selected for incubation to avoid an uneven distribution of heat, relative humidity and oxygen.
- Eggs must be fertilized (presence of a cock)
- Use undamaged, clean, neither too small not too large. (Medium size).
- Collect eggs regularly /e.g. 3 times a day
- Preferably store eggs not more than a week.
- Handle hatching eggs carefully because they are costly!

**NB:** Any Dirty or Cracked Egg is Lost as a Hatching Egg

### **Candling Eggs**

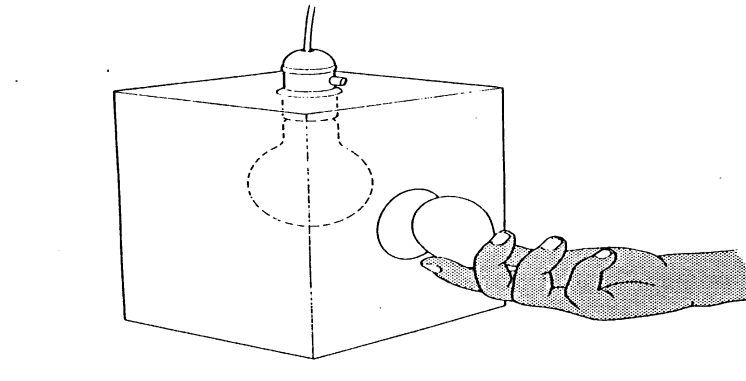
Candling is done to identify infertile eggs, early dead embryos and late dead embryos two or three times during the incubation period usually at 7<sup>th</sup> and 14<sup>th</sup> day of incubation. Candling on the 7<sup>th</sup> day of incubation is done to remove infertile eggs and dead embryos.

- Infertile egg: transparent and clean when light is passed through it, Yellowish spot near the centre (yolk) and much less evident air cell
- Early dead embryo: small, none motile black spot fixed at the side of the egg indicate early dead embryo, Absence of blood vessel , Adhering to the shell and Presence of pink ring or blood ring surrounding the embryo
- Live embryo: is spider like with red legs, Are large end floats and Clean air cell and blood vessel

Candling the 14<sup>th</sup> day of incubation is to remove late dead embryo. Live embryo fills the egg with clearly seen blood vessel and moving motile embryo

## Candling of eggs

A simple candling device:



**Fig. 1:** A simple candling device

### 2.5. Incubation: -

Incubation is the art of bring eggs from laying to successful hatching. It is the process of placing eggs under optimum environmental condition for hatching. Incubation can be achieved either by natural means using broody hen or by artificial means through incubator. Incubation period is a time period or interval between incubation and successful hatching. It is 21days for chicken egg



**Fig. 2:** Incubator

### 2.6. Undertaking Brooding

Brooding is the process of caring for young chicks from day-old to eight weeks of age. It entails essentially, the provision of factors like heat, light, humidity, ventilation, feed, water and disease control measures for the survival and rapid growth of chicks.



There are two methods of brooding chicks namely

- 1 Natural brooding
- 2 Artificial brooding

**Natural brooding**:-is chick raising with the help of broody hen (mother), which:

- Provide the heat required
- Communicate feed and water source
- Alert danger conditions
- Provide protection against predation

Disadvantages of Natural Brooding

- Broody hen ceases laying during the incubation period of 21 days
- Few number of chicks are raised at a time and it does not fit to market oriented production system
- Success depends on the maternal instinct of broody hen and prevalence of predators in the area.

**Artificial Brooding**:- involves the use of special appliances which provide conditions similar to those of the broody hen such as adequate warmth, protection from harsh external factors of weather (wind, rain, temperature) and predators. It also allows good feeding, watering and disease control. Artificial brooding is the best method for the commercial producer. Artificial brooding has some advantages over the natural method namely:

- Chicks may be reared at any time of the year.
- Thousands of chicks may be brooded at once depending on the capacity of the farmer.
- Sanitary conditions may be controlled.
- Temperature may be regulated and
- Feeding may be controlled to meet the production objective

## 2.8. Rearing chicks

Rearing is the care of chicks from about eight weeks of age to the point they begin to drop eggs, i.e. point of lay. It can also be described as the care of growers. Rearing is critical to the overall success of the poultry industry because it ensures that the development of the birds at this stage of growth is satisfactory.



## Important Considerations in Rearing

- The growers need more ventilation than the chicks.
- The growers require lower environmental temperatures than chicks.
- Even though chicks are photo-sensitive, from as early as three weeks old, the effect of light is negligible until the fowl is 7 weeks old.
- The growers are fed on a type of diet called growers mash.

### 2.9. Dressing:

Dressing is the process of preparing carcass from poultry.

#### 1. Preliminary precautions

- fasting
  - ✓ a prior fast of 4-6 hrs, allowing the intestine to be emptied
- Transportation
  - Shortest possible transportation,
- Detecting sick birds
  - ✓ a rest of 2 to 3 hr before slaughter is good for detecting sick birds.
- Catching

Birds should be caught under least stressful condition

#### 2. Killing

The birds are killed by cutting the jugular vein with knife

#### 3. Plucking

Means removal of feathers from poultry

- On small /traditional farms chickens are plucked by hand.
- Scalding-
  - ✓ Immersing birds in hot water to speed up plucking

#### 4. Evisceration

Removal of visceral organs /intestines by drawing or complete evisceration

#### 3. Chilling

It is cooling carcass to avoid bacterial proliferation

#### 4. Final packaging

The most popular current packaging is a plastic dish. Storage is affected either in a refrigerator at + 2<sup>0</sup>C, in a freezer at 5<sup>0</sup>C or with super cooling 18<sup>0</sup>C.



<b>Self-Check -2</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is the advantage of artificial brooding over natural brooding?(5pts)
2. What are the determinant factors of artificial brooding? (4pts)
3. What does it mean when we say brooding and rearing? (6 points)
4. What are the most important cares during debeaking (5pts)

**Note: Satisfactory rating – 20 points      Unsatisfactory - below 20 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

1

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



<b>Information sheet-3</b>	<b>Observing enterprise policies and procedures in handling and disposal of waste materials</b>
----------------------------	---

Enterprise policies and procedures in relation to workplace practices in the handling and dispose materials are observed. Any employee who works in industry which raises poultry or any farmer who raise his own stock and also employee must observe and follow Enterprise policies and procedures in relation to workplace practices in the handling and disposal of materials.

### **Important points in handling and disposal of waste materials in poultry farm**

- treating, reusing, and disposing of wastewater using different methods
- safe and proper disposal of non-hazardous farm waste
- handle, collect, segregate, store, label and dispose of Human waste
- preventing the contingency site from being polluted
- storing, segregating, treating, disposing of farm waste
- store, secure, utilize and dispose of pesticides/equipment
- spill prevention, response, containment, and cleanup



<b>Self-Check -3</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down the important points in handling and disposal of waste materials considered in poultry farm (8pts)

**Note: Satisfactory rating – 5 points                      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

- 1.
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_



<b>Operation sheet-1</b>	<b>Cleaning and disinfection of poultry Shed</b>
--------------------------	--

- Remove old litter
- Dry cleaning after removal of litter
- Wet cleaning with caustic soda/liquid soap/ bleaching powder and water under pressure
- Blow lamping of non inflammable excess/material
- Spraying of disinfectant (fumigation)
- Repair of cracks and crevices
- White washing of house
- Cleaning and disinfection of water system, feeding system and all the equipments in use
- After cleaning the house must be left empty for at least 15 days.
- Preparation of brooders 24hrs before arrival of chicks
- Add at least 5 cm new litter material for the first time, the litter should be clean and dry.





<b>Operation sheet-2</b>	<b>Egg selection</b>
--------------------------	----------------------

- Collect/ buy/ eggs
- Select hatching eggs by using egg selection criteria (size, shape, smoothness, shell thickness, etc)
- Take sample egg and break it to know whether it is fertile or not.
- Observe the broken egg and if there is spot (sperm) the egg is fertile.
- Finally, Incubate only the selected eggs.



<b>Operation sheet-3</b>	<b>Egg candling</b>
--------------------------	---------------------

- Prepare necessary materials
- Set up your candling equipment in a dark room within close proximity to the incubator.
- Select an egg from the incubator/nest
- Hold it above the light.
- Place the larger end of the egg (where the air sac is) directly against the light.
- Hold the egg near the top, between your thumb and forefinger.
- Tilt the egg slightly to one side and rotate until you get the best view.
- Look for signs that the egg is a winner
- Mark each egg with a number and take notes on your findings



<b>Operation sheet-4</b>	<b>Debeaking of chicken</b>
--------------------------	-----------------------------

- Assemble all the required materials such as debeaker.
- Clean and disinfect debeaker.
- Handle the chicken properly (Handling is best achieved by two person)
- Cut the beaks of older birds separately; always cut the upper beak first.
- Cut 1/3 to 1/2 of the upper beak first.
- Cut the lower beak to the same length or make it (slightly) longer.
- Prevent stress as much as possible.
- Clean and sanitize the materials used during debeaking.



<b>Operation sheet-5</b>	<b>Dressing of poultry</b>
--------------------------	----------------------------

- Assemble and clean the required materials for dressing poultry.
- Attain the preliminary precautions.
- Kill or slaughter chicken
- Scald and pluck (remove feathers)
- Eviscerate the carcass (Removal of visceral organs /intestines)
- Chill or cool the carcass
- Pack the carcass properly
- Clean and sanitize the materials used during dressing poultry.



<b>LAP Test</b>	<b>Practical Demonstration</b>
-----------------	--------------------------------

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within 8 hours.

Task 1. Clean and disinfect of poultry Shed

Task 2. Select egg

Task 3: candle egg

Task 4. Debeak chicken

Task5. Dress poultry



## References

Rose, S.P. (1997) Principles of Poultry Science. CAB International. Harper

Adams Agricultural College. UK. 41-45, 103-115

IPC (N.D) Practical poultry housing. Innovation and practical centre- livestock sector.  
Barnveld. The Netherlands.

Appleby, M.C., Hughes, B.O and Elson, S.A (1992) Poultry Production Systems.  
Behaviour, Management and welfare. CAB International, Wallingford, Uk.238

Say, R.R (1987) Manual of poultry production in the tropics. CAB international,  
Wallingford, UK. 118p, 8-23, 27-36



<b>Instruction Sheet</b>	<b>Learning Guide 16</b>
--------------------------	--------------------------

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

- Handling Waste material produced during work
- Handling and transporting Materials, tools and equipment
- Reporting problems or difficulties in work place
- Cleaning, Maintaining and storing Materials, tools and equipment
- Reporting work outcomes to supervisor and receiving feedbacks

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to –

- Handle Waste material produced during work
- Handle and transporting Materials, tools and equipment
- Report problems or difficulties in work place
- Clean, Maintain and store Materials, tools and equipment
- Report work outcomes to supervisor and receiving feedbacks

#### **Learning Instructions:**

13. Read the specific objectives of this Learning Guide 16.
14. Follow the instructions described in number 1 to 6.
15. Read the information written in the “Information Sheet (1, 2, 3, 4 and 5) in page **2,4,6,8** and **10** respectively
16. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
17. Accomplish the “Self-check 1, Self-check t 2, Self-check 3, Self-check 4, and Self-check 5” in page 3, 5,7, 9 and 11 respectively.
18. If you earned a satisfactory evaluation proceed to “the next topic”. However, if your rating is unsatisfactory, see your teacher for further instructions or read back the Learning guide information sheets 1-5. Submit your accomplished Self-check. This will form part of your training portfolio.



### Handling Waste materials produced during work

There are different waste material or product which will be produced in work place but the main waste material which will produced at the poultry are the following

- litter and broken components
- plant debris
- plastic,
- metal and paper-based
- broken eggs
- dead chickens,

These waste materials which are produced in poultry have to be removed from the site on regular manure properly;

Disposable materials properly buried in deep enough trench and should be covered with quicklime and then with soil or use Burning. But Burning is the most difficult because the Fumes and smoke may be a problem to the surrounding environment. Mud holes should be frequently filled or exclude the animals away from it quickly.

❖ **N.B. Never dispose waste materials everywhere.**





<b>Self-Check -1</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down 5 waste material produced in poultry raising activity. (5pts)

**Note: Satisfactory rating – 5 points                      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

**5.**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Information sheet-2****Handling and transporting Materials, tools and equipment**

Materials used for raising poultry activity have to be handled and transported safely. Any Poultry farmer has to do this task safely because any damage will create inconvenience on the next use of the equipment, and also it will cause injury to our hens.

All the materials and equipment used in poultry farming should be handled and transported according.

Good handling measurements are:-

- Provide sanitation services to the working devices after and before work
- Identification of the functional equipment from non-functional ones.
- Apply the kaizen principle according to the poultry farming disciplines
- Use safe and well organized storage for tools, equipment and materials.
- Use recommended transportation system as the transported materials nature.
- Make of care during loading and unloading of materials, equipment and tools
- All materials, tools and equipment should be handled and transported according



<b>Self-Check -2</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are Good handling and transporting measurements of materials and equipment used in poultry farming (5pts)

**Note: Satisfactory rating – 5 points                      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

- 1
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_



<b>Information sheet-3</b>	Reporting problems or difficulties in work place
----------------------------	--

There are many difficulties that may encounter in work place /poultry farm

Some of them are:

- Temperature –too cold and too hot temperatures require modification
- Disease out breaks/ disease transmission
- Insufficiency of working facilities
- Contaminations (feed, water and feeding and watering trough)
- Mal factions of machines and equipment like incubator, debebear,
- Predator’s problem
- Disposed materials and dead birds
- Theft and the others should be properly reported.



<b>Self-Check -3</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the problems/difficulties that reported in poultry farm/work place (8pts)

**Note: Satisfactory rating – 8 points                      Unsatisfactory - below 8 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_



<b>Information sheet-4</b>	Cleaning, Maintaining and storing Materials, tools and equipment
----------------------------	--

Work site have to be clean and safe for efficient work of employee. So any poultry farmer or employee in poultry farm has to keep sanitation of his work site; which mean that he has to clean his work area after completing his task by doing these he can keep healthy himself and his staff members.

After completion of the work all materials, tools and equipment they has to be cleaned, sanitized, disinfected, maintained, and stored properly.

Cleaning refers to removal of dirt, filth or unwanted substances matter from the materials, tools and equipment.

The materials tools and equipments should be Stored in a safe, dry place/ ventilated and away from animals reach, and placed on wooden racks or shelve in order to prevent direct contact with soil



<b>Self-Check -4</b>	<b>Written Test</b>
----------------------	---------------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Mention how and where to put/store materials tools and equipments after completing the task. (5pts)

**Note: Satisfactory rating – 5 points                      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_



Information sheet-5	Reporting work outcomes to supervisor and receiving feedbacks
---------------------	---

After completing any work directed by supervisor any work outcome and work problem have to be reported to supervisor

Poultry activity should be reported daily, weekly, monthly and yearly to the concerned body as well as for documentation. It is important source of information and advice from someone who has collected and studied the farm profitability, in order to make decisions and take actions. Reports should be clear, understandable, and meaningful. The outcome measurement process have gone well, poorly reported information will discourage use or provide misleading information.

Some of the report in poultry farm includes

- Health analysis/out breaks
- Profitability of the farm
- Production record report
- Reproduction record report
- Feeds and feeding report and etc





Self check-5	Written test
--------------	--------------

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down some of the reports kept in poultry farm.(5pts)

**Note: Satisfactory rating – 5 points**

**Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date \_\_\_\_\_

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_



## References

CAB International 1987, Manual on poultry production in the tropics Wallingford, Oxon, United Kingdom

French, K.M. 1984, Practical Poultry Raising Peace Corps, Trans- Century Corporation, Washington D.C.

G.C Banerjee (2000) A text book of Animal Husbandry. 8<sup>th</sup>ed Oxford & IBH publishing CO. Pvt.ltd, New Delhi / Calcutta, India