Poultry production

NTQF Level III

Learning Guide # 54

Unit of Competence: Poultry brood

Module Title: Brooding poultry

LG Code: AGR PLP3 M13 LO1 LG-54

TTLM Code: AGR APR 3 TTLM 0120v1

LO1. Prepare for brooding

Instruction Sheet	Learning Guide # 54

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

- ✧ Interpreting work to be undertaken from work program
- ✧ Held discussions with other workers to ensure continued smooth operation of the production process.
- ✧ Selecting , checking, and servicing tools and equipment
- ✧ Identifying hazards and implement safe work procedures
- ✧ selecting, using and maintaining suitable personal protective equipment

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 –

- ✧ Interpret work to be undertaken from work program
- ✧ Held discussions with other workers to ensure continued smooth operation
- ✧ Select, check, and service tools and equipment
- ✧ Identify hazards and implement safe work procedures
- ✧ select, use and maintain suitable personal protective equipment

Learning Instructions:

1. Read the specific objectives of this Learning Guide .
2. Follow the instructions described in number **1 to 5**.
3. Read the information written in the “Information Sheet (**1, 2, 3, 4, and 5**) in page 3, 5,9, 13 and 15 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 2, Self-check 3, Self-check 4** and Self-**check 5”** in page **3, 5,9, 13 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 .

Information sheet -1	Interpret work to be undertaken from work program

Any activates in poultry work should required to be interpreted and confirmed . creating a suitable working environment is required to confirm the work in a proper manner so a safe and suitable environment should be created , if any problems in countering during confirming the activities making a deep analysis based on the work require for farther activates and make a clear information on it .

The most common activates we should do in brooding are:

- Monitoring and Recording temperature, times, humidity and chicken numbers
- Handling hatchling and brooding chickens in the shed
- Providing litter and replacing
- Providing access to feed and water
- Adjusting and monitoring health conditions of the chicken
- Controlling and monitor any uncommon behaviors
- Clean and make sanitation
- Proper wast handling and disposals
- Adjusting shed temperatures in accordance chicken
- Maintaining and servicing of any faulty items

before undertaken the work preconditions has to be taken this are:

- Putting on all necessarily PPE
- All brooding materials where assembled
- Creating safe and clear environment

- Communication sign where clearly set

Having arranging all the things now you can undertake the work in a safe and proper manner . After completing any work directed by supervisor any work outcome and work problems have to be interpreted.

Self-Check -1	Written Test

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

1. List down the activates most common activities in brooding of chickens. (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.

- _____
- _____
- _____
- _____
- _____

Information sheet-2	Held discussions with other workers

Terminology

A. Staff refers to all of the employees at a business, or especially a school, where the teachers as a group a recalled "the staff."A completely different meaning of staff is a long wooden stick or rod, particularly one that has a specific purpose — like a walking stick or a weapon. This is the original meaning of staff, from the Old .

B. Owners a person who owns something or one who has the legal or rightful title to something or one to whom property belongs.

C. Stakeholders A person, group or organization that has interest or concern in an organization.

Stakeholders can affect or be affected by the organization's actions, objectives and policies. Some examples of key stakeholders are creditors, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources.

D. Customers A person who buys goods or services from a shop or business.

Interaction staff, owners, stakeholders and customers

A successful team communicates openly, shares knowledge and understanding, embraces diversity and demonstrates mutual respect and professional ethics.Team members should be aware of each others work and support each actively.Professionals who constantly deal with customers (inside and outside the company) need to strive for certain qualities to help them answer customer needs.

The professional qualities of customer service to be emphasized always relate to what the customer wants. Customers grade your customer service during each transaction but you rarely know it.

While there are a multitude of customer needs, **six basics** needs stand out:

Friendliness – the most basic and associated with courtesy and politeness.

Empathy – the customer needs to know that the service provider appreciates their wants and circumstances.

Fairness – the customer wants to feel they receive adequate attention and reasonable answers.

Control – the customer wants to feel his/her wants and input has influence on the outcome.

Information – customers want to know about products and services but in a pertinent and time-sensitive manner. It is also very important for customer service employees to have information about their product or service. Service providers who answer, “I don’t know” or “It is not my department” are automatically demeaned and demoted in the mind of the customer. These employees can end up feeling hostile as well as unequipped. Customers want information, and they disrespect and distrust the person who is supposed to have information but does not.

Figure.1 Teams discussion

Self check 2	Written Test

Instructions: Answer the following questions.

1. Define the following terms .(6%)
   A. Staff
   B. Customer
   C. Stack holders
2. Discuss about the professional qualities you need to have to interact with your customer.(5 %)

Note: **Satisfactory rating - 11 points and above** **Unsatisfactory - below 11**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer

1. _____
2. _____

Information sheet-3	Selecting, checking, servicing tools and equipment

The required materials, tools and equipment are identified according to lists provided and/or supervisor instructions. Checks are conducted on all materials, tools and equipment, and insufficient or faulty items are reported to supervisor. If one person needs to raise poultry and use product of his animal he have to fulfill the following materials, tools and equipment.

Materials needed for raising poultry

- Bedding material
- Disinfectants
- Feeds
- Litter materials may include:
  - Old newspaper
  - Saw dust
  - Rice hulls

The following major equipment is required during the brooding period.

Brooder: These are the units that furnish the heat needed to keep the chick's worm.

Brooder guard: These are guard that keep the chicks around the heat source

Drinkers: At the beginning of the brooding period shallow drinkers are used. As the chicks grow up these drinkers should be replaced by deep drinkers.

Feeders: For the first few days of brooding, the chicks may be fed on flat or shallow feeders like pans or egg trays. When they are about one-week-old large feeder made of metal or wood are usually used.

Infra-red bulb : which provide heat for chickens

Her are some pictures of equipment and facilitate used in chickens rearing

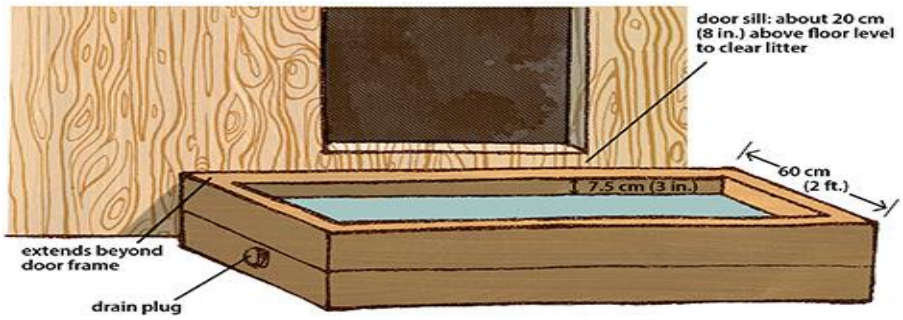

Figure.2 Dipping base

Figure. 3 Brooder ring

Figure. 4 Traditional made brooder ring

Figure. 5 Drinker

Figure. 6 chickens on litter materials

Figure. 7 Chickens feeder

Figure 8. Infrared red bulb

Figure 9 . canopy brooder

Self check 3	Written Test

Instructions: Answer the following questions.

1. Write tools and equipment used in brooding of chickens .(5 %)

Note: **Satisfactory rating - 5 points and above** **Unsatisfactory - below 5**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer

1. _____
2._____

Information sheet-4	Identifying hazards and implement safe work procedures

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

Physical

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

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. NH3, H2S, CO2, CO, and CH4.
- Exposure to disinfectants, detergents, formaldehyde and pesticides.

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.

- Salmonella and avian influenza are among the most common Zoonotic diseases transmitted from poultry to humans. Poultry workers are at a greater risk of being affected by these diseases.

Implement control majors

Implementation measure where set depending of rules and regulation of poultry farm Many farm could be prevented or their impacts reduced by wore proper personal protective equipment (PPE) and following OHS requirements among this **OHS**

Requirements are:

- Using of relevant protective clothing and equipment,
- Use of tooling and equipment,
- Workplace environment and safety handling of material,
- First aid kit
- Hazard control and hazardous materials and substances.
- Using gowns, rubber boots of appropriate size, goggles, gloves etc,
- Following OHS procedure designated for the task
- Checking and fulfilling required safety devices before starting operation

Problems occur during brooding operation:

1. **Coccidiosis control** – It is the most common disease of poultry at young age coccidiostats are added to feed in sufficient quantity to suppress the multiplication of oocytes

2. **Stress –** Majority of stress is occur when birds are handling during the vaccination and due to that bird are huddle together. To overcome the problem we may increase the brooder temperature to fill birds comfortable or we may add anti stress or compound in water/feed to overcome stress

3. **Inclement Weather –** Environmental heat mat create a severe stress although young chicks can tolerate higher temperatures than older birds. When the temperature is more

the birds will eat less and drink more water. To overcome this problem increase the feed and water along with an increase in the floor space allowance.

4. **An absorbed yolk –** High temperature of chicks during the first two days under the brooder also lowers the yolk absorption. Diseases that raise the body temperature prevent utilization of the yolk material in young chicks. Feeding chicks soon after hatching also causes a slower absorption of yolk materials in young chicks.

5. **Mortality Standards –** Chick mortality during the first week in the brooder house is higher than any week. Losses during the second week should be slightly less.

Self-Check # 4	**Written Test**

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

1. Write types of hazardous ? (2pts)
2. problems encountered in brooding operation? (5pts)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

1._____

_____

_____

Information sheet-5	**Selecting, using and maintaining suitable personal protective equipment**

Suitable Personal Protective Equipment (PPE) is selected and checked prior to use.

Personal protective Equipment required for raising poultry include:

- Overalls
- Gloves
- Safety goggles
- Steel capped boots/shoes
- Sunhats

Protective clothing suitable for the handling to be done should be worn at all times; laboratory coats, coveralls, gloves, masks, boots, etc. As noted above, the handling of non-human primates is a special situation that requires special protective clothing

Padded cloth gloves

Protects hands from sharp edges, slivers, dirt, and vibration. Not acceptable for handling hazardous materials.

Metal mesh gloves

Better protection than cloth gloves against sharp edges and cuts. Not acceptable for handling hazardous materials.

Rubber gloves

Offer protection when working around electricity.

Heat-resistant gloves

Offers protection from heat and flames.

Vinyl/neoprene gloves

Protects hands against toxic chemicals. Selecting the right glove is critical in handling the varying level of chemical toxicity. See link below for description of protective material used in gloves.

Nitrile protective gloves

Provides good protection when using many different pesticides.

Barrier laminate gloves

Offer the best chemical resistance in gloves designed to handle hazardous chemicals. Avoid cotton-lined or rubber gloves that absorb chemicals that result in continued absorption.

Head protection: - To provide protection to potential hazards such as falling objects, striking against low-hanging objects, electrical hazards, or chemical application.

We have to considered the followings:

- 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.

Self-Check -5	Written Test

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

1. write major PPE and their major functions (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. _____

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Poultry production

NTQF Level III

Learning Guide # 55

Unit of Competence: Poultry brood

Module Title: Brooding poultry

LG Code: AGR PLP3 M13 LO2 LG-55

TTLM Code: AGR APR 3 TTLM 0120v1

LO2. Carryout brooding operations

Instruction Sheet	Learning Guide # 55

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

- Monitoring and Recording temperature, times, humidity and chicken numbers
- Handling hatchling and brooding chickens in the shed
- Providing litter and replacing
- Ensuring access to feed and water
- Adjusting shed temperatures in accordance chicken
- Recording and Reporting observed changes
- Removing dead or culled young chicken
- Extending brooding area based on stocking density

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 –

- Monitor and Record temperature, times, humidity and chicken numbers
- Handle hatchling and brooding chickens in the shed
- Provide litter and replacing
- Ensure access to feed and water
- Adjust shed temperatures in accordance chicken
- Record and Report observed changes
- Remove dead or culled young chicken
- Extend brooding area based on stocking density

Learning Instructions:

1. Read the specific objectives of this Learning Guide .
2. Follow the instructions described in number **1** to **8**.
3. Read the information written in the “Information Sheet (**1, 2, 3, 4,5,6,7 and 8**) in page **3, 5,7, 9,11,17,25 and 31**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 2, Self-check 3, Self-check 4, Self-check 5, Self-check 6, Self-check 7 and Self-check 8”** in page **3, 5,7, 9,11,17,25 and 31** 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 **1-8**. Submit your accomplished Self-check. This will form part of your training .
7. Do operation sheet and LAP test on page 39

Information sheet -1	**Monitoring and Recording temperature, times, humidity and chicken numbers**

Temperatures,times,humidity and chicken number are monitored and recorded accurately according to supervisors instructions. Temperature and humidity should be monitored at least twice a day for the first five days and then daily after. Measurements of temperature and humidity should be taken at chick level. Chickens number should be known every day , chickens mortality is very high with in the age of 7 days and if any mortality is their it should be recorded .

Their time also recorded I.e the age of the chickens because their feeding ,management will vary with their age groups. This are some of the activates we should to do in brooding shade :

- Achieve a humidity level of 60-70%for the first 3 days
- Temperature is critical during brooding and should be maintained as recommended.
- Adjust temperature settings accordingly if RH increases above 70% 0r below 60%.
- Monitor temperature and humidity regularly.
- Establish a minimum ventilation rate from day one to provide fresh air and remove waste gases .
- Avoid died chickens
- Respond to changes in chick behaviour

Effect of temperature and humidity *if not properly monitored*

High RH (above 70%), from 18 days on wards can cause:

- Wet litter & its associated problems

- Less evaporate heat loss
- Heat stress

Action: reduce relative humidity

- *Good ventilation is the best solution to control high RH*
- The main aim of controlling relative humidity is to maintain dry friable litter.

Figure. 1 litter moisture content

what happen if the relative humidity and temperature is very high?

Ventilation without drafts is required:

- To maintain temperature and relative humidity at the correct level
- To allow sufficient air exchange to prevent accumulation of harmful gases (carbon monoxide, carbon dioxide and ammonia)

MONITERING THE FOLLOWING

Watch the chicks under light, if chicks are spread uniformly under the light and brooder area, then the temperature maintained is correct. If the chicks are huddled under the light, heat provided is not enough.. If the chicks are away from the light source, the

heat intensity is high. Give enough space for watering and feeding for growing chicks according to the age of the birds.

Self-Check -1	Written Test

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

1. What happen to the chickens if the RH is very high . (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

- _____

Information sheet-2	Handle hatchling and brooding chickens in the shed

What do we mean by Brooding? ***This is a term which means, keeping chicks warm and comfortable. Replacing its mother's.***

There are different types of brooder

- Canopy (floor) brooder
- Reflector brooder
- Infrared bulb brooder

Canopy brooder is an inverted umbrella like equipment which is made of galvanized iron .However, bamboo basket of 0.6- o.9(2-3ft9) diameter can be used .

Reflector brooder: electrical brooder .It consists of an electrical heating element (usually1-25kw) canopied (capped) with a reflecting surface. It also consists of a bulb point to fix an electrical bulb and a thermostat for regulating temperature .The equipment is expensive but very durable depending for brooding .

Infra red bulb brooder: are available in market in two voltages 150 and 250. Heat the chicks when contact with light.

Baby chicks are really quite easy to raise. With a few pieces of equipment and a small place to put them, success in brooding and rearing is virtually assured. During this period of the chicken's life, the most important needs are for **warmth, protection, feed,** and **water.** Brooder houses should be equipped with different equipment that is necessary for satisfactory production. All equipment and material other facilitate where ready for proper handling .

Proper handling of hatching and brood are very important in order to reduce death risks

Different facilitate should be accessed for the chickens and creating suitable environment for the chickens among this :

- Feeding and watering facilitate
- Good ventilation
- Net and clear environment
- Enough space per chickens
- Free from stress
- Suitable for management
- Suitable Brooders based on environment
- Suitable litter materials with even distribution on the floor
- Good brooder ring I.e no corner

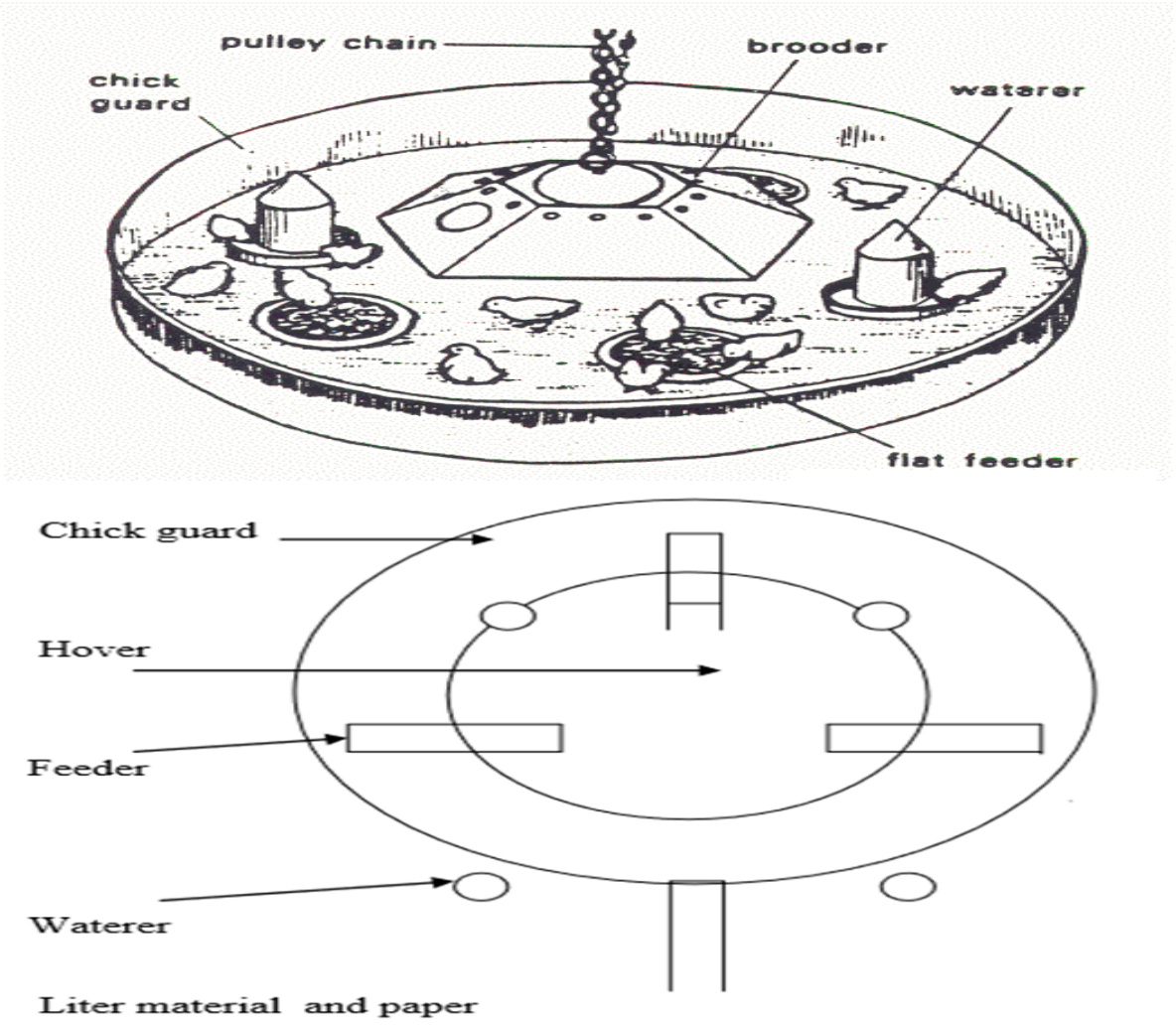


Figure 3 . Brooding facilitate

Brooder management :

Zero –8 weeks Chick hood is the most critical age in birds life as it readily picks up problems due to chilling, malnutrition, over crowding and diseases. Productivity of a layer or a broiler depends largely on the way how they start their life. New born chicks require warmth to keep them in comfort. Hence they are provided with artificial heat by a device called brooder.

- Brooder can be hover type, flat, type, wooden reapers fitted with bulbs or heating bulbs or infra red bulbs

Arranging for brooding Spread litter on a prepared floor, over which place old news paper arrange the heating device in the middle. Cover the desire area with chick guards.

Keep waterer and feeders, radiating from the heat source. Conserve heat by blocking the side-mesh with gunny sacks. Medications I day glucose- 5% in water II to 7th day – antibiotic + Vit.A + B Complex III week & VI week coccidiostats in water.

Always use boiled and cooled water for 1st three weeks. Then sanitize the water for the rearing period Vaccination : Mareks, Ranikhet and Fowl pox. After 3 weeks continuous or 23 hours light period has to be given to the chicks to induce night feeding and avoid trampling.

De-beaking is done at II week to prevent cannibalism and feed wastage – Feed used in chick mash. Contains 22% crude protein and 2800 kcal/kg ME.

Restricted feeding

To keep the birds in normal desirable wt. range -10% to 20% of the feed required by the bird is restricted from 10-18 week of age.

Lighting : Grower should not be provided with extra height except day light to counteract undesirable effect on sexual maturity.

De-worming : Debeaking, delicing if necessary – are to be carried out before the onset of lay.

Chick handling

Freshly hatched chicks often suffer due to handling several times, which means stress for them. In the hatchery one may reckon among them:

1. ***The collecting of the chicks***: never collect chicks for the second time; certainly do not help chicks to hatch by cracking the egg into two parts.

2. ***sexing***: hand sexing needs to be done with very young chicks; take precautions against rough sexing.

3. ***Dubbing***: use a proper, well cutting pair of scissors.

4. ***Vaccinating*** (Marek): inject musculatory, do not damage blood vessels, nerves or bone tissue.

5. ***Grading***: eliminate all malformed and weak chicks

6. ***Preparing the dispatch***: use only new boxes with the punched holes open; adapt the number of chicks per box to the climate conditions (in summer less than in winter). Put the boxes on racks or trolleys while waiting for delivery. When plastic chicken boxes are used, clean and disinfect them thoroughly, and use paper in bottom of the box.

For proper handling of chickens the following operations are necessary

Activities prior arrival of day old chicks include:

- Houses, surrounding areas and all equipment must be cleaned and disinfected
- Individual sites should manage birds of a single age (managed on the principles of 'all-in, all-out').
- Litter material should be spread evenly to a depth of 8-10cm.
- Where floor temperature is adequate (28-30°C) litter depth can be reduced
- Houses must be pre- heated for a minimum of 24 hours before the arrival of chicks.
- Monitor temperatures regularly to ensure uniform temperatures throughout the brooding area
- Ensure that adequate clean water at room temperature is available.

- Provide fresh starter feed in the brooder area.
- Ensure chicks have easy access to feed (i.e. use flat pans, trays or paper sheeting)

N.B . Do not place feeders or drinkers directly under or near brooders

Hygiene

- Once the house is cleaned and disinfected,
- Prevent pathogens from entering the unit
- Disinfect boots thoroughly, or have separate footwear for inside and outside
- Avoid animals entering the unit (birds, rodents, cats, ..)
- Avoid visitors as much as possible

Do vaccination

Poultry disease which are controlled by vaccination include :

- Infectious laryngotracheites
- Coryza
- Chronic respiratory disease
- Fowl pox
- Fowl cholera
- Newcastle disease
- Egg drop syndrome 76(EDS 76)
- Infectious bronchitis

Table. 1 Vaccination scheduled

Day/ week	Vaccination	Mode	Remarks
Day 1	Mareks	Subcutaneous injection	Done at the hatchery
Day 10	Gumbroo (1 st dose)	Drinking water	Avoid chlorinated water - use boiled water
Day 18	Gumbroo (2 st dose)	Drinking water	Avoid chlorinated water - use boiled water
3 weeks	New castle (1 st dose)	Eye drop or drinking water	Avoid chlorinated water - use boiled water
3 weeks in hot area	Fowl pox	Wing stab	Use skilled personnel
6 in other area			
8 weeks	Newcastle 2nd dose	Eye drop or drinking water	Avoid chlorinated water - use boiled water
	Fowel typhoid	Intramuscular injection	Use skilled person
18 weeks	New castle (3rd Dose at point of laying)	Eye drop or drinking water	Repeat every 3 months
19 weeks	De-worming using levamisole	Drinking water	Repeat every three month

Self-Check # 2	Written Test

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

1. write common equipment ? (5pts)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

1. _____

_____

_____

Information sheet-3	Providing litter and replacing

Poultry litter is used in confinement buildings used for raising chickens. Common bedding materials include wood shavings, sawdust, peanut hulls, shredded sugar cane, straw, and other dry, absorbent, low-cost organic materials.

Sand is also occasionally used as bedding. Litter material should be spread evenly to a depth of ***8-10cm***. Where floor temperature is adequate (28-30°C) litter depth can be reduced

LITTER ALTERNATIVES

- Shavings - excellent absorptive qualities.
- Sawdust - often high in moisture, prone to mold growth and chicks may consume it, which may cause aspergillosis.
- Chopped straw - wheat straw is preferred to barley straw for absorptive qualities.
- Coarse chopped straw has a tendency to cake in the first few weeks.
- Paper - difficult to manage when wet, may have a slight tendency to cake and glossy paper does not work well.
- Rice Hulls - an inexpensive option in some areas, rice hulls are a good litter alternative.
- Peanut Hulls - tend to cake and crust but are manageable.

Litter type Minimum Depth or Volume

- 2.5 cm (1 in.) Wood shavings
- 2.5 cm (1 in.) Dry sawdust
- 1 kg/m2 (0.2 lb/ft.2) Chopped straw
- 5 cm (2 in.) Rice hulls
- 5 cm (2 in.) Sunflower Husks

Important functions of litter

Important functions of litter include the ability:

- To absorb moisture.
- To dilute excreta, thus minimizing bird to manure contact.
- To provide an insulation from cold floor temperatures.

Though several alternatives may be available for litter material, certain criteria should apply Litter must be absorbent, lightweight, inexpensive and non-toxic. Litter characteristics should also lend to post production applications whether for use as compost, fertilizer or fuel.

Litter replaced when:

- ✧ Becomes wet and dusty
- ✧ Every week
- ✧ New batches comes
- ✧ If not comfortable for the broods

The materials used for bedding can also have a significant impact on carcass quality and chicken performance. There are specific practices that must be followed to properly maintain the litter and maximize the health and productivity of the flocks raised on it. Many factors must be considered in successful litter management including:

- Time of the year
- Depth of the litter
- Floor space per chicken
- Feeding practices
- Disease
- The kind of floor
- Ventilation

- Watering devices
- Litter amendments and even the potential fertilizer value of the litter after it is removed from the house.

Litter floor :

- ✓ Floor must be flat and smooth - easy to clean and disinfect
- ✓ Have a good depth of litter cover

Figure4. Saw dust litter

Self-Check -3	**Written Test**

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

1. write major requirement of poultry litter (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. _____

Information sheet-4	Ensuring access to feed and water

Egg yolk provides a protective store of antibodies and nutrients for the first three days Yolk sac absorption is rapid during the first ***48 hours*** Chicks have not started to eat for one or two or even three days will be uneven and the average flock weight at slaughter will be significantly reduced.

Chick feeding

For the first 14 days ,feed the chicks on a least 13 grams each of chicks starter since it is rich in protein and vitamins that enable them grow at a faster rate and for strength. After 14 days feed them on 18 grams of chick mesh and 120 grams after 2 months Give day old old chicks liquid paraffin -not the normal paraffin to help in clearing and softening the digestive systems in preparation for feed feed ingestion As it is a laxative, it also prevent constipation which leads leads to death . in administering liquid paraffin , drop about 2 drops , but more than 5 drops . in 20 litters of water . Since the liquid paraffin is not dissolve in water it will dispersed to form thin films and the chicks consume it as they took water .The so called okra that is the most common food in Benshangul Gumez can replace paraffin .

It is known that okra has a medicinal as well as a nutritional values in addition to this it has a mucilage that makes to have a laxative character can do as paraffin's do in a better way.her are same of a manage mental activates we should to do this are :

- Chicks must have continuous access to feed in properly-adjusted feeders
- Feed space using paper covering minimum 50% of the floor area at placement.
- Having found feed at floor level in the first days, the chick has then to find it again in the automated/manual feeding system.

Table .1 Feed consumption during the brooding period (per bird / week in grams)

Week No.	Type of birds		
	Meat type	Medium size	Leghorn type
1	70	70	45
2	240	120	90
3	260	175	135
4	280	230	180
5	350	280	225
6	420	330	270
7	470	380	315
8	470	420	360
Total	2560	2005	1620

Figure 4. Different types of feed

Figure 5 . How to feed chicks

Table 2. Space requirements during the brooding period

Types	Space requirement
Floor space (deep litter)	8/m2
Long feeder	7cm/ Bird
Round feeder	3 cm/ Bird
Drinking space (round drinkers)	1.5 cm/ Bird

Water consumption measurement can be used to assess performance.

- There is a high correlation between feed and water consumption.
- At 21^{o}c, the ratio of water volume (liters) to feed weight (kg) remains close to 1.8:1
- Water requirement increases by approximately 6.5% per degree centigrade over 21°C.
- Water consumption for the first 24 hours should be approximately 24 ml.
- On average water intake from day old to slaughtering (6 - 7 weeks) is 12L/chicken
- Ideal water temperature is between 10-14°C (50-57°F)

However birds can tolerate a wide range of water temperature;

- water temperature should never be allowed to be less than 5°C (41°F) or greater than 25°C (77°F).
- If this occurs the drinking system must be flushed

Figure 6. Drinking of chickens

Figure 7 . Crop fill assessment

Crop fill evaluation has to be done this will very important for the following points this are

- To know The health status of the chickens
- The palatable of the feeds
- The availability of water and feed
- Facilitate like water and feeders whether suitable or not for the chickens

Table 3 . crop fill evaluation

Crop fill	No. of chicks	Full - Pliable *Feed & water*	Full - Hard *Only feed*	Full - Soft *Only water*	Empty
Evaluation					

Self-Check -4	**Written Test**

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

1. Water requirement of chickens . (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. _____

Information sheet-5	**Adjusting shed temperatures in accordance to chickens**

Two basic systems of temperature control are used for brooding management in poultry:

- **Spot brooding (canopy or radiant heaters)**. The heat source is local so chicks can move away to cooler areas and thus select for themselves a preferred temperature.
- **Whole-house brooding**. The heat source is larger and more widely spread so chicks are less able to move to select a preferred temperature.

Whole-house brooding refers to situations where the whole house or a defined part of the house is heated by 'forced air heaters' only and the aim is to achieve one temperature in the house or air space.

In both spot and whole-house brooding systems, the objective is to stimulate both appetite and activity as early as possible. Achieving the optimum temperature is critical. Brooding temperatures for RH ***60–70%***

Spot Brooding :

Chick behavior is the best indicator of correct brooder temperature.With spot brooding, correct temperature is indicated by chicks being evenly spread throughout the brooding area.

The layout for a spot brooding set up would be typical for 1,000 chicks on day one. Chicks are placed in a 5×5 meter square (25 m^2) or a 16.5×16.5 foot square (272 ft2), which gives an initial stocking density of 40 chicks/m2 (4 chicks/ft2) If stocking density is increased, the number of feeders and drinkers, and the heating capacity of the brooder, should also be increased accordingly.

Whole-House Brooding:

In whole-house brooding, there is no temperature gradient within the house, although supplementary brooders might also be provided. The main whole-house heat source can be direct or indirect (using hot air). Carefully monitor and control house temperature and humidity when whole-house brooding is practiced.

Key Points To Remember About Brooding Temperature of Brooding Management in Poultry :

- **Temperature is critical and should be maintained as recommended.**
- **Temperatures should be checked manually at chick level.**
- **Chick behavior should be observed closely and frequently.**

Brooding Temperature :

- 95^{o}C I week
- 90^{o}C II week
- 85^{o}C III week
- 80^{o}C IV week

- Chicks cannot regulate their own body temperature until they are around 12-14 days of age.
- Upon arrival chicks like a high temperature of about 32°- 34°C (at chick level!) Recommended values are:
- Air temperature of 30°C (measured at chick height in the area where feed and water are positioned).
- Litter temperature of 28-30°C.
- Relative humidity of 60-70%.

Note: Start heating the unit more than one day in advance to make sure also the floor and the rest of the environment gained that temperature!

- ✧ Temperature should be monitored regularly to ensure a uniform environment throughout the whole brooding area
- ✧ Brooding temperature; Broiler chicks

Table3. Temperature requirements for different age group

Age (days)	Whole-House Brooding Temp °C	Spot Brooding Temp°C	
		Edge of Brooder (A)	2 m from Edge of Brooder (B)
Day Old	30	32	29
3	28	30	27
6	27	28	25
9	26	27	25
12	25	26	25
15	24	25	24
18	23	24	24
21	22	23	23
24	21	22	22
27	20	20	20

N.B. Chick behaviour is the best indicator of correct temperature!

Temperatures given are just indications

- ■ Smaller chicks need higher temperatures
- ■ Weaker chicks need higher temperatures

Figure 8. Check chicks if comfortable!

During spot breeding :

Spot brooding If the temperature is too high

- Chicks make no noise
- Chicks pant, head and wings droop
- Chicks away from heat source

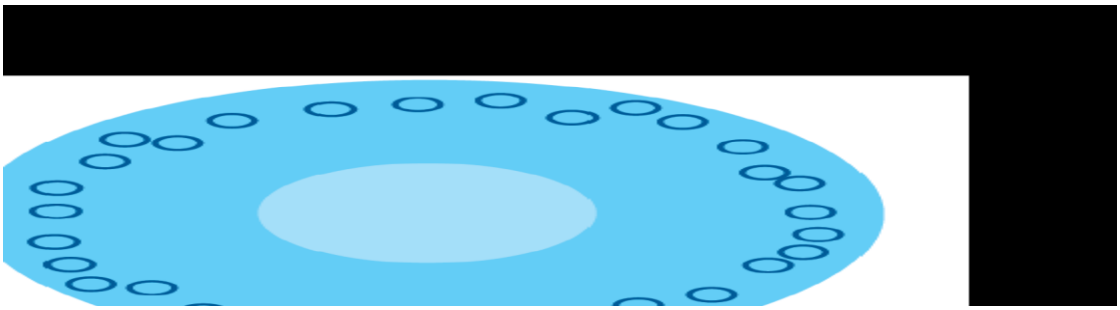


Figure 9. Chicks are scattering

Spot brooding If the temperature is too law

- ✧ Chicks crowd to brooder
- ✧ Chicks noisy, distress-calling

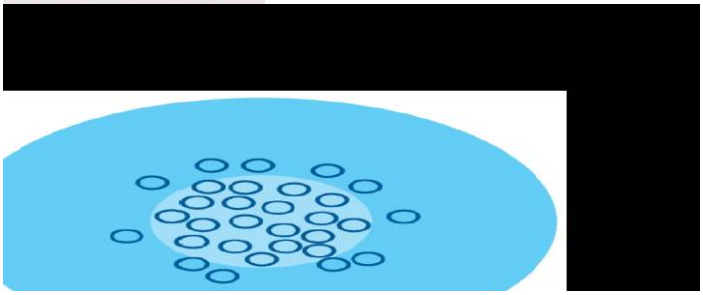


Figure 10. Chicks get clustered

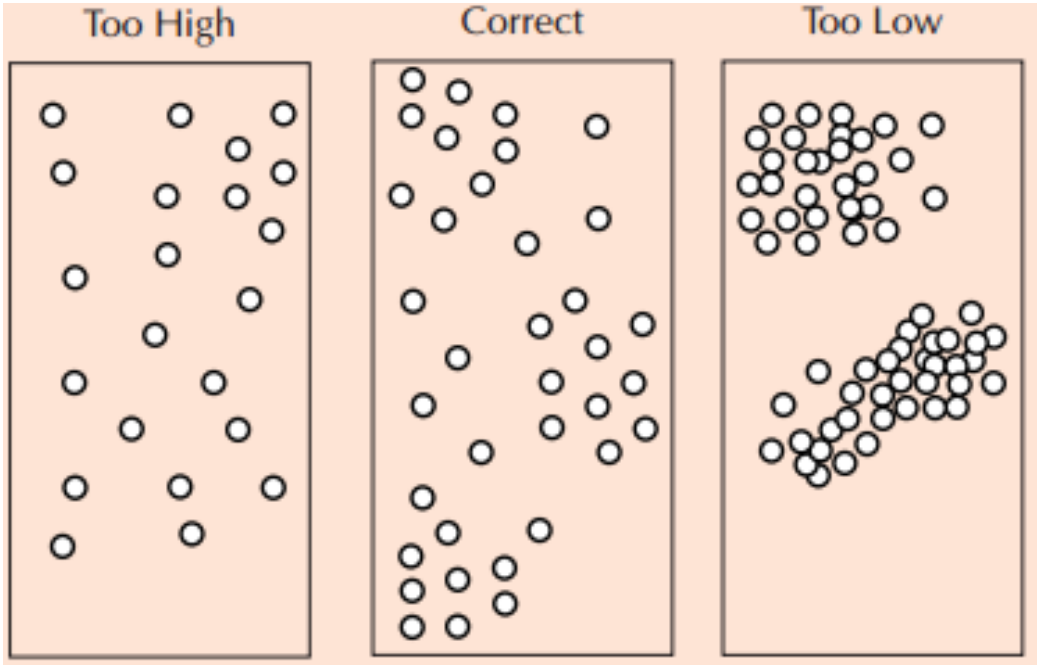


Figure 11. Whole-House brooding – Behavioral Response

N.B. Provide 23 hours light and 1 hour darkness per day need to grow fast

Self-Check -5	Written Test

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

1. List methods of temperature controlling methods (5pts)
2. Draw spot method in case of high and low temperature of chickens behaviour . (5 points)

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. _____
3. _____
4. _____
5. _____

Information sheet-6	Recording and Reporting observed changes

Record keeping assists the farmer to calculate an accurate gross margin and make informed decisions about the farm. Recording data and processing it into technical parameters is an excellent tool to assess:

What is going on?

1. *How does the flock compare to previous flocks?*
2. *How does the flock compare to published parameters for this hybrid?*
3. *How does the flock compare to my neighbor's flock?*
4. *What is the result of the change I made in husbandry?*
5. *What are the weak points and what are the strong points?*

One needs to record:

Daily:

- number of chicks died
- amount of feed supplied

Weekly:

Average weight of the chicken; randomly collect 2% of the flock or at least 50 chickens every week, always on the same day at the same time and weigh them to find the average weight.

To be compared with the guide:

- Weight (g)
- Daily gain (g) – needs body wt. record on daily basis (not practical)
- Av. daily gain per week (g)
- Feed Conversion Rate cumulative
- Daily feed intake
- Cumulative feed intake

Periodically:

- Arrival date
- Initial weight
- Number of chicken arrived
- Vaccination dates
- Number of died chickens

Remark

; Every time you enter a poultry house you should always observe the following activities:

- Birds eating
- Birds drinking
- Birds resting
- Birds playing
- Birds “talking”
- Birds should never be huddling

Self-Check -6	Written Test

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

1. Why we record? (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-7	**Removing dead or culled young chickens**

Removing and disposing dead or culled young chickens appropriately is important in poultry enterprise. This will enable to control disease transmission , ingestion of died chickens and bad smell formation from the died chickens and creating suitable safe and suitable environment ,

N.B Any abnormal chickens like deformed legs, beaks and other abnormality shall remove from the batches

Methods of removing and disposing culled or dead chickens

- Disposal pits:-burying in pits.
- Incineration:- When operating, be sure carcasses are completely burned to a white ash.
- Composting :- on farm disposal.
- Rendering ;-transporting dead chickens to a rendering plant

Self-Check -7	Written Test

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

1. What are methods of removing dead chickens (5pts)

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

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

Score = _____

Rating: _____

Answer Sheet

Name: _____ Date _____

1. _____
2. _____
3. _____

Information sheet-8	**Extending brooding area based on stocking density**

Quality of housing and the environmental control system determine the best stocking density. Floor area needed will depend on:

- Target wt. & age at processing
- Climate and season
- Type and system of housing
- local legislation
- Quality assurance certificate requirement
- Extending brooding area based on stocking density
- Space 45 – 60 sq cm space is enough per chicks in electric brooder for first week than for broiler birds 1 sq foot space/bird is enough to rear but if space is not a problem than we may provide 1.5 sq foot space/bird is better to get more growth in broiler birds.

Figure 12. Chicken density

- ***In temperate regions, stocking density could reach up to 24 chickens/m2.***
- ***In tropical regions, stocking density could reach up to 18-20 chickens/m2.***

Self-Check -8	Written Test

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

1. Write floor area needed will depend on (5pts)

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

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

Score = _____

Rating: _____

Answer Sheet

Name: _____ Date _____

1. _____
2. _____
3. _____
4. _____
5. _____

Operation sheet-1	Brooder ring preparation

Objectives :

- To provide heat for the brood
- Proper handling of the brood
- To produce healthy chicken

Procedures

1. Put on all the necessarily PPE
2. Assembled all necessary tools, equipment and material
3. Cut a 8 by 4 hardboard into 2 equal parts in length.
4. Join the 2 boards to form a circle.
5. The 2 boards should be held together with pegs to allow for expansion.
6. Fill in the brooder ring with suitable litter material up to 4 inches (10 cm) from the floor. This can be wood shavings or straw. Never use sawdust
7. After disinfecting the litter material, spread newspapers to cover the floor.
8. Place the heat source at the center of the brooder ring.
9. Expand the ring regularly to create more space as the chicks grow
10. The size of the brooder ring is determined by the number of chicks.
11. For a brooder size for 50 chicks, the diameter should be 50 feet. The estimated number of hard boards is one.
12. For a brooder size for 100 chicks, the diameter should be 10 feet. The estimated number of hard boards is one and a half.

Operation sheet-2	Crop examination

Objective :

- ❖ To ensure that feeding and drinking of the broods is normal or not
- ❖ To make an action if their is problems

Procedures:

- ❖ Put on PPE
- ❖ Assembled all the necessary materials, tools and equipment
- ❖ Examined the crops of the chicks 12 hours after the arrival.
- ❖ Ensure that they have located the food and water.
- ❖ Examine If 95% of the crop is soft and pliable, it means the chicks have located the water and feed and are feeding and drinking well.
- ❖ Examine If the crops are hard, it means they have not located the water.
- ❖ Examine If the crops are swollen and distended it means the chicks have not located the feeds.
- ❖ Examine if the feeding trays and drinkers should be rearranged to ensure they are accessible to the chicks.

Operation sheet-3	Evaluate litter moisture

Objective :

- ❖ To control high moisture
- ❖ To control dryness of litter

Procedures :

- ✓ Put on PPE
- ✓ Pick up a handle
- ✓ Squeeze it gently
- ✓ The litter should slightly adhere to the hand and break down
- ✓ If moisture is in excess it will stay compacted even when
- ✓ If litter is too dry it will not adhere to your hand when squeezed
- ✓ Excessive litter moisture **(>35%)** may cause health challenges

Operation sheet-4	Preparation of Brooder House

Objectives :

- ✓ For proper handling of day old chickens
- ✓ To control disease transmissions
- ✓ Easy to manage

Procedures

1. The litter material of the previous batch should be heaped up first so that building up of germs could be destroyed.

2. After 2 to 3 days the heaped up material can be removed from the brooder room.

3. The portion of the litter sticking over the ground must be scraped and removed.

4. The removal of spider web, cob webs and dirt are also essential.

5. The floor and sidewalls should be washed with plain water.

6. Disinfection of the room is carried out by spraying phenyl, lysol, etc at 5%

concentration.

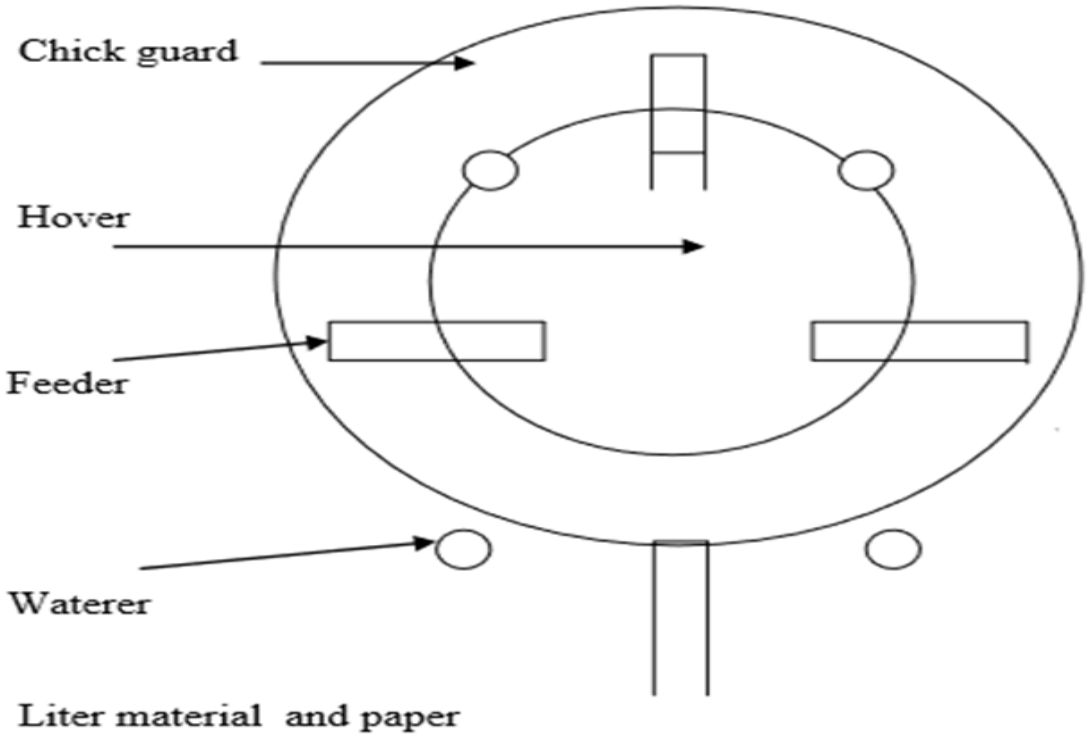
7. Use Flame gun to destroy the insects.

8. The entire floor and side walls should be white washed with fresh limestone.

9. Feeders, waterers, , chick guards should be washed and disinfected in phenol or lysol.

10. Dry it in the sun for a day.

11. Hang the gunny bags around the brooder house to maintain the room temperature to maintain temperature not below 800F in the first week 750F in the 2nd week 700F III week, 650F -IV week



LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 24 hours.

Task 1: Brood ring preparation

Task 2: Crop examination

Task 3: Evaluate litter moisture

Task 4: Preparation of brood house

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Poultry production

NTQF Level III

Learning Guide # 56

Unit of Competence: Poultry brood

Module Title: Brooding poultry

LG Code: AGR PLP3 M13 LO3 LG-56

TTLM Code: AGR APR 3 TTLM 0120v1

LO3. Shed operation

Instruction Sheet	Learning Guide # 56

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

- Removing all debris and waste material
- Cleaning, maintaining and storing tools, machinery and equipment
- Maintaining a clean ,safe area and hygiene maintenance activities
- Reporting work outcomes

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 –

- Remove all debris and waste material
- Clean, maintain and store tools, machinery and equipment
- Maintain a clean ,safe area and hygiene maintenance activities
- Report work outcomes

Learning Instructions:

1.Read the specific objectives of this Learning Guide .

2.Follow the instructions described in number 1 to 4.

3. Read the information written in the “Information Sheet (**1, 2, 3 and 4**) in page 4**,11,14,** and 21respectively

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 2, Self-check 3, Self-check 4, Self-check 5 and Self-check 6”** in page 4**,11,14,** and **21** 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 **1-4**. Submit your accomplished Self-check. This will form part of your training .

Information sheet -1	Removing all debris and waste material

During cleaning the shad there are different waste material or product which will be produced and could affect the environment directly or indirectly main waste material and other things which will produced at the poultry are the following

- litter
- Poultry dung
- plant debris
- plastic
- broken objects
- dead chickens
- Ammonia gas
- Feathers, foul smell and high noises

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.***

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 shed after completing his task by doing these he can keep healthy himself and his staff members.

Handling Waste material produced

Waste materials include:

- Litter, sick and dead birds
- Plastic, metal and paper-based materials
- Recycled
- Returned to manufacturer
- Re-used

Self-Check -1	Written Test

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

2. List down the activates before confirming your job . (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.

- _____
- _____
- _____
- _____
- _____

Information sheet- 2	Cleaning, maintaining and storing tools, machinery and equipment

Machinery , tools and equipment's used to raise chicken should be handled clean , maintain and store properly at the end of the task . At the time of loading, transportation and unloading care is required. After using these materials, store them in appropriate areas.

Cleaning is the process of removing unwanted substances, such as dirt, infectious agents, and other impurities, from an object or environment. Cleaning occurs in many different contexts, and uses many different methods. Several occupations are devoted to cleaning.

Cleaning -is a two-step process

step 1. Dry cleaning

- Using a broom, brush, shovel, rag or compressed air to remove dust, soil and dry organic material

Remember! Dry cleaning should not be used for cleaning poultry houses infected with air-born diseases such as:Avian houses infected with air born diseases such as: Avian Influenza or Newcastle it may cause aerosolization of the virus and increase the risk of spreading the disease

Step 2. Wet cleaning

- Using detergent/soap and water soak the area and scrub to remove remaining and scrub to remove remaining organic material as well as dirt and grease

Disinfectants are chemicals that slow disease agents activity multiplication and their growth Slow disease agents activity, multiplication and their growth or -Kill disease agents

Self-Check # 2	**Written Test**

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

1. Write types of cleaning ? (5pts)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

1._____

_____

_____

2._____

_____

_____

3._____

_____

_____

_____

Information sheet-3	Maintaining a clean ,safe area and hygiene maintenance activities

A clean and safe work site should be maintained while completing routine activities.

maintaining Cleanliness and hygiene

Regular cleaning and disinfection is substantially important "to keep pathogens away" from your chicken and for maintenance of good health. Special attention should be given to avoiding incursion of infectious agents from outside the farm. Similarly, adequate bio-containment plan is needed to control the spread of pathogens within the same premise. It also enforces the use of adequate method; disinfectant (chemical) or physical measures (burning/burying) to reduce the risk of contamination. The type of disinfectant, mode of application, type of material and dimension determines the outcome of disinfection. The following procedures illustrate specific matters of good farm hygiene.

- Clean regularly poultry premises, feeding and watering equipment's and farm compound.
- Use a clean water source to water chickens.
- Regularly test the portability of drinking water by public health laboratory by conducting bacteriological and chemical tests with satisfactory results.
- Make sure your feed resource is safe from possible contamination.
- Keep feed stuff dry to avoid growth of fungus and bacteria. Make sure that feed containers (sacks) are safe (new items are preferable).
- Avoid movement of feed containers between farms.

Cleaning and maintaining Equipment

Every farm that handles chicken should have proper handling facilities, which are well-maintained and in good working order. Before starting, and between animals, immerse instruments constantly in a solution of an effective antiseptic

Disposing waste

- Clean litter regularly and dispose in a dedicated pit.
- Clean and disinfect farm equipment contaminated by manure

Self-Check -3	Written Test

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

1. write procedures of good farm hygiene. (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. _____

Information sheet-4	Reporting work outcomes

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
- Litter handling
- Temperature and humidity controlling measures
- Vaccinations of chickens
- Feeds and feeding report and etc
- Watering and watering facilitate
- Debeaking of chickens
- Number of died chickens
- Brooding facilitate

Self-Check -4	Written Test

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

1. Mention some of the points should be reported . (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

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

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