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Lecture title: Poultry management
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Summary:

Advantages of Chicken farming

- Rearing period is 6-7 weeks only.
- More number of flocks can be taken in the same shed.
- Broilers have high feed conversion efficiency i.e. least amount of feed is required for unit body weight gain in comparison to other livestock.
- Faster return from the investment.
- Demand for poultry meat is more compared to sheep/Goat meat.

Principles of health management

The principles of poultry health management are:

1. Prevention of disease
2. Early recognition of disease
3. Early treatment of disease.

The Disease

A Disease is any condition that interferes (prevent) with the normal functioning of the cells, tissues, organs and systems. Diseases of poultry have many causes. These causes include:

1. Deficiencies of essential nutrients e.g. vitamins, minerals; or other nutrients.
2. The consumption of toxic substances i.e. poisons.
3. Physical damage e.g. environmental extremes and injury.
4. Parasite infestations i.e. external and internal such as lice and worms.
5. Infectious disease caused by micro-organisms e.g. bacteria and viruses.

***Various aspects for prevention and control of poultry diseases are:**

1. Cleaning and Disinfection.
2. Proper housing.
3. Proper feeding.

4. Stress management
5. Disposal of poultry waste
6. Restriction for visitors
7. Vaccination against dreadful poultry diseases and preventive medication.

(1) Cleaning and Disinfection:

Proper cleaning followed by disinfection of poultry shed and its surrounding areas and poultry equipment's are must to prevent the chance of introduction of disease producing organisms in the farm. Cleanliness is very important to maintain the sanitation and hygiene of the poultry farm; The Cleanliness procedures include: -

a- Poultry house is to be cleaned daily to remove dirt, dust.

b- The feeders and waterers are also to be cleaned daily before giving feeds and water in the morning. The feeders should be always scraped (once a week) to remove dirt, in order to prevent fungal growth.

c- Electric bulbs in the poultry shed should be cleaned once in a month.

d- Cleaning is necessary for disinfection, because presence of organic matter reduces the action of disinfectants.

e- disinfectant is to be applied followed by rest and fumigation.

Some commonly available commercial disinfectants are phenyl, lime, formalin, bleaching powder, potassium permanganate, caustic soda, After application of disinfectant (as per manufacturer's directions), rest is to be given for at least 2-3 weeks to break up the life cycle of disease producing organisms in the poultry house.

The last step is formaldehyde fumigation to kill the remaining organisms. For disinfection purpose **20g KMn04** and **40ml** of formalin (40%) are required for **10 m^3** area. In case of disease outbreak and for disinfection of hatchery room, vehicles *etc.* the concentration can be increased to 2 to 3 times as needed.

Types of disinfectants used in poultry farms:

Phenyl - For washing of floor, washing and dipping of shoes as 5% solution.

Lime - For disinfection of litter, floor and poultry carcass @ 4-7kg/30 m^2. It generates heat, absorbs moisture, and liberates oxygen which destroys coccidia and eggs of parasites and even bacteria, and keeps fungi under control.

Formalin - Available as 40% solution of formaldehyde gas, generally used for fumigation of brooder and hatchery along with potassium permanganate. Gas should be allowed to remain for half an hour in the rooms, incubators, brooders, *etc.* Formalin solution (3-5%) can be used for spraying as disinfectant for most bacteria and virus.

Copper sulphate - Generally used to destroy fungi. 0.5% solution for destroying fungi on poultry tools.

Bleaching powder - 20% solution of bleaching powder is used for disinfecting floor and poultry equipment's (feeders, waterers *etc.).*

Caustic soda (Sodium hydroxide): - 2% solution for cleaning of waterers, feeders, metallic fittings, brooders, floor, etc. It is to be applied cautiously by gloved hands.

(2) Proper Housing:

It is important for optimum growth and production as well as for proper maintenance of health. So we have to apply the following rules: -

A- Overcrowding must be avoided.

B- All-in all-out system of rearing is better than multistage rearing in a single location. All-in all-out method helps to prevent spread of diseases due to cross age infections.

C- Poultry house should be kept dry and well ventilated.

D-The design and construction of poultry houses should be made according to the environmental conditions of the particular area.

Stocking Density

For breeders – Males will reach a heavier weight than females so require extra floor space to ensure they reach their adult weight. Males and females must be grown separately for at least 6 weeks, or to 21 weeks.

Brooding – Males and females – for the first 5 days' stock at 30 chicks/square meter

Rearing – Females - 6 – 7 birds/square meter

Males – 3 – 4 birds/square meter

Production Breeder Females: - 3 – 5 birds/square meter
Broilers 6-8wks: – 12 – 14/square meter
Laying pullets: – 10/square meter
Laying hens: - max 5/box 60cm x 60 cm.

(3) Proper Feeding

Poultry should be fed properly **as per the age**, **type and production of birds**, i.e., the quality and quantity of feeds and proper method of feeding should be maintained for optimum growth and production.

A- Two types of feeds are given to the broilers (chicken), **broiler starter** (0-4 weeks) and **broiler finisher** (5-6 weeks). **In case of layers** three types of feeds are provided:(**1**) **chick feed** (0-8 weeks), (**2**) **grower feed** (9-20 weeks or up to the point of laying) and (**3**) **layer feed** (21 weeks or from the point of laying to 72-80 weeks or up to the end of economic laying).

B- Poultry feed should contain all essential nutrients, *like*, protein, carbohydrate, fat and moisture vitamins and minerals as per the requirements for a particular group of birds**.**

C- Feed should be free from microbial contamination. Poultry feeds are very prone to different types of bacterial and fungal contamination, *like.*, Salmonella, Escherichia coli, Mycoplasma, Aspergillus, *etc.*

D- Feed ingredients having toxic principles like gossypol, aflatoxin, trypsin inhibitor *etc.* should not be used for preparation of poultry feed.

E- Feeds should not be stored for more than 45 days, particularly when environmental humidity is very high, in order to prevent the fungal growth and development of rancidity, besides the wastage of feeds due to rodents.

(4) Stress Management in Poultry:

In poultry farm, birds are subjected to various kinds of stress. **Some stress factors are avoidable and some are unavoidable.**

• **Avoidable stress**: factors are: - **1**- overcrowding (giving less floor space per bird). **2**- improper debeaking**. 3**- sudden change in feed. **4**- poor quality of feed. **5**- irregular feeding schedule**. 6**- inadequate ventilation. **7**- improper lighting schedule. These types of stress can be reduced by improving the management practices.

• **The unavoidable stress** : factors in poultry farm are:- **1**- shifting of birds (from hatchery to farm, or from one house to another like from brooder house to grower house and from grower house to layer house). **2**- extremes in weather (heat stress in summer or cold stress in winter). **3**- vaccination. **4**- deworming and other preventive medication. To **minimize** the action of these stress factors **anti-stress medicines** are to be used in proper dose rates.

*** Vitamin C and other vitamins, liver tonic, glucose and electrolytes, *etc.* are used as anti-stress medicines**.

(5) Disposal of Poultry Waste:

Various poultry wastes are poultry droppings, hatchery waste and dead birds. Proper disposal of these poultry wastes is essential to prevent the spread of diseases.

• The dead birds should be deeply buried in the soil or fully burnt in the incinerator.

• Poultry droppings are mixed with deep litter materials in the deep litter system of poultry rearing. This litter should be removed from the poultry house before introduction of new lot of birds. In case of cage system of poultry rearing, poultry droppings should be removed daily.

(6) Restriction for Visitors:

• Foot-bath with disinfectants is to be used at the entrance of poultry farm as well as at the entrance of each house to prevent the introduction of organisms by the movement of workers.

• Casual visitors, foreign vehicles *etc.* should not be allowed to enter the farm. Technical persons and some selected visitors/farmers should be asked to make use of foot-bath provided with disinfectants before entering in the
poultry house.

(7) Vaccination and Preventive Medication against Dreadful Poultry Diseases:

In case of poultry health management 'prevention is better than cure' principle is to be applied more seriously. So proper vaccination schedule is to be followed to develop immunity against killer poultry diseases.

• The requirements for successful vaccination

1) Vaccine itself induces stress to the birds. So, use of all available vaccines

for a particular bird is not generally recommended, and it very much depends on the incidence of a particular disease in the farm and its surrounding areas.

2) Vaccines should be procured only from reliable sources.

3) The vaccines are to be stored under refrigeration until use at the temperature of 2° to 8°C.

4) Proper vaccination schedule including accurate dose of vaccines and proper age of birds are to be followed as recommended by the manufacturer.

5) Expired vaccines and left-over vaccines should never be used.

6) It is desirable to vaccinate the birds during **the cooler** part of the day, either in the early **morning** or in the **late evening** especially in summer months.

7) Vaccination should not be done to the sick birds. Only healthy birds are to be vaccinated at their recommended ages.

8) It is desirable to provide some vitamins at least a week before the vaccination to overcome vaccine induced stress.

9) For vaccination through drinking water, birds are to be **kept thirsty** for a **few hours** before giving vaccine containing water. Clean and cold drinking **water should be used for this purpose and it should be free from chlorine or any drug**.

ROUTES OF ADMINISTRATION OF VACCINES IN POULTRY

Different routes of administration of vaccines in poultry are:

1. Oculo-nasal route (drop into eye/nostril)
2. Oral route (in drinking water)
3. Aerosol route (spray)
4. Parenteral route (injection)

1. Oculo-nasal route (drop into eye/nostril)

Some vaccines are applied through eye or nostril with the help of dropper. General dose is 1 drop into eye/nostril. This intra ocular/nasal route is generally used for application of vaccines at the early part of bird's life.

This route is easy to apply and a satisfactory one. Several vaccines which can be applied through this route are available in the market, *e.g.* Newcastle disease vaccine, Infectious Bronchitis vaccine, *etc.*

2. Oral route (in drinking water)

This is a very easy route of administration of vaccines and commonly used. But its effectiveness is not assured all the times. It is better to use this route to condition the birds for stronger vaccines.

The following points are to be kept in mind for application of vaccines through this route – (**Oral route procedure)**

1- Birds should be kept thirsty for a few hours before application of vaccines in the drinking water.

2- The water should be free from chlorine or any drug.

3-Waterers must be thoroughly cleaned and washed with clean water to remove disinfectants.

4- It is better to add skim milk powder to water for vaccine administration (@ 2.5-3g/liter). The milk protects the vaccine against residues of disinfectants and adverse pH reaction. Pasteurized whole milk may also be used for this purpose (@ 30-50 ml milk/liter of water).

3. Aerosal route (spray)

Vaccines may be used through aerosol route, *i.e.*, by means of spraying within the poultry house when the air is still. Birds inhale the vaccine in the form of dust or spray. This is an easy and very effective method of vaccine administration.

4. Parenteral route (injection)

Some vaccines are applied through parenteral route, *i.e.*, intramuscular injection (I/M) or sub-coetaneous injection (S/C).

Special Care of Broilers and Layers during Summer and Winter

Heat Stress:

High temperature and humidity produce heat stress to the chicken leading to: **1**-reduction in feed intake **2**- loss of egg production,**3**- reduced egg size,**4**- poorer egg shell quality **5**- in extreme weather conditions mortality may result.**6**-uneconomic feed conversion efficiency **7**- loss of immunity. The most favorable temperature zone in case of chicken is **18-21°C**.

To combat the ill-effects of summer stress the following measures are to be taken seriously: -

(1) Housing management

• Height of the poultry shed should be 2.5-3 meters for proper ventilation in the poultry house.
• Planting of shady trees in and around the poultry farm is necessary to reduce the ill-effect of hot summer.
• Distance between the two poultry sheds in the farm complex should be at least 20 meters. for proper air circulation.
• East-west direction of poultry shed (length-wise) is beneficial to reduce the direct sun light entering inside the shed.
• Depth of deep litter (in case of deep litter system of poultry keeping) is to be reduced.
• In extreme cases, ceiling fans may be used to give comfort to the birds. Water sprinkling over the birds during extreme heat conditions may save the birds from heat stroke.
• About 10% birds of the recommended to be reduced in the poultry house.

(2) Water management

• Chicken will not drink hot water, that leading to decreased feed consumption and less performance. They generally refuse to drink water at temperature above 38°C. So, it is very important to provide cool drinking water during summer months. To cool the water ice cubes may be added in the water trough.
• In general feed and water intake ratio in chicken is 1:2, but during summer months it may be increased up to 1:4. So more water troughs are to be provided during summer months; and dose of medicines if provided through drinking water should be adjusted accordingly.

(3) Feeding management

• Feeds should be given during the cooler part of the day, *i.e.,* at early morning and at late evening.
• More numbers of feeding troughs are to be provided than normal.
• If possible, the energy content of the compounded feed is to be reduced, and protein, vitamin and mineral contents of the feed are to be increased, with the help of Poultry Nutritionist. On an average energy of

100-150 Kcal /kg of feed is to be reduced and 2% protein is to be increased in the normal poultry feed.

(4) Medication

1- During the noon hours' **glucose** and **electrolytes** may be given in the drinking water).

2- **Vitamin C** may be added in the drinking water.

3- **Multivitamin** medicines may also be added in the drinking water

B-SPECIAL CARE OF BROILERS AND LAYERS DURING WINTER

It is easy to prevent winter stress in comparison to summer stress on poultry. Winter stress is severe on poultry when the ambient temperature goes below 10°C. To counteract the ill-effects of winter stress the following rules are to be taken.

- Extra heat is to be provided in the house.
- Energy content of the feed is to be increased by about 100-150 Kcal/kg of feed.
- Depth of deep litter is to be increased.