Principles of Poultry Biosecurity

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Poultry Management

Managemental Considerations

- Balanced nutrition, veterinary supervision, and more attention to chicken house , will help to ensure a better chickens that will perform to their maximum potential.
- Checking feed ,light, air, water, , sanitation, space, staff and biosecurity serves as detailed approach to best management throughout the life of the chicken flock.

Managemental Considerations, cont.

- Stopping time of production between flocks of at least two weeks.
- Good and appropriate cleaning and disinfection between flocks help minimise transmission of diseases between flock and give time to prepare for the next herd.
- Preparation of the chicken house before receiving the chicks, keep in mind heaters, floor temperature, temperature and humidity testing devices, ventilation, drinkers, feeders, etc.

Brooding Period

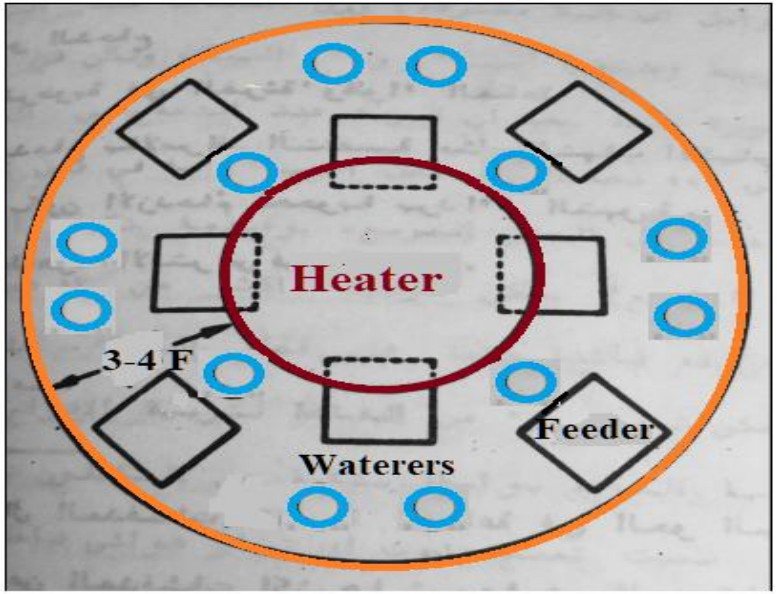
- **The brooding period is important for the development of the chicks.**
- **The right start of chicks during brooding have a positive effect on health and performance throughout the life's of the flock.**
- **Elements that should be monitored carefully and known during the brooding period:**

Brooding Period cont.

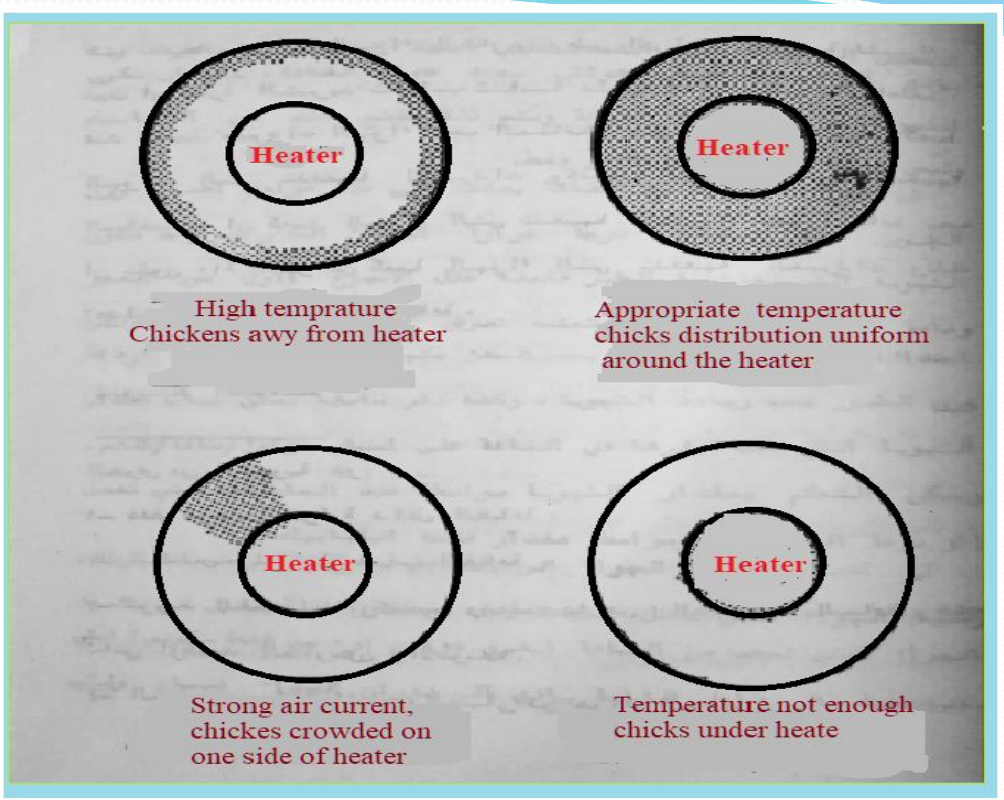
- **Chickens are unable to regulate body temperature during first four to six days. post hatch.**
- **For this reason, environmental temperature control is important for the flock, particularly critical during this period.**
- **Therefore it is important not to overheat nor overcool the chickens, which can greatly affect performance.**

Brooding Period cont.

- The management guide for the breed will show the appropriate temperature for the flock.
- Also we should consider the temperature of the floor and litter and not just the air, so that the entire environment is at the correct temperature.



Suggested distributions of feeders and waterers arround heater during brooding period



Chicks distributions (dotted areas) around Heaters according to their comfort depending on house temperature

Two types of drinkers, manual and automatic with round feeders and heaters are distributed before the arrival of the chicks. Automatic drinkers and feeder not used during early life of chicks

Arrival of chicks in covered van in cardboard boxes. Then distributing them throughout the chicken house in groups of three and four boxes.

The method of empting the chicks from the boxes, starting from the end of the house and moving towards the exit door.

Distribution of one day old egg layer chicks upon arrival in cages.

Chicken Growth

- During their first week of life, chicks increase about four times their original body weight due to the development of their skeletal and muscle systems.

- Which suggest a rapid growth of the chicks at this period. This depends largely on first feeding phase given to the chicks which focus on nutrients to help growth.

Chicken Growth cont.

- In contrast to the end of the flock, nutrients are focused on body maintenance.

- Protein, calcium, phosphorous and various minerals are necessary to help with this growth. Using minerals that are bio- available to the chicks and highly digestible protein can have a perfect effect on growth during this period.

Chickens Immunity

- Some antibodies can be transferred from the Breeders to chicks via egg yolk.
- Maternal antibody help to protect earl hatched chicks during first two to three weeks of live.
- Besides that, the immune organ and tissues (Immune system) start to develop in the embryo and after hatching.

Chickens Immunity, cont.

- Active immunity is developed in young chicks when vaccinated in ovo then through vaccinations and exposure to infectious agents.

- Stress can suppress the immune system and this can have negative effect on the performance of the chickens.

Water management

- Chickens generally consume more water than feed (about two times). therefore water is an important nutrient for chickens.
- Providing clean water will reduce challenges and improve performance.
- The following factors should be considered.
- a- Quality, mineral content, pressure and accessibility.
- b-Cleanliness of drinkers and lines before and during production period to prevent biofilm and mineral buildup.
- c- Flushing lines.
- d- Maintenance of drinker equipments

Litter Management

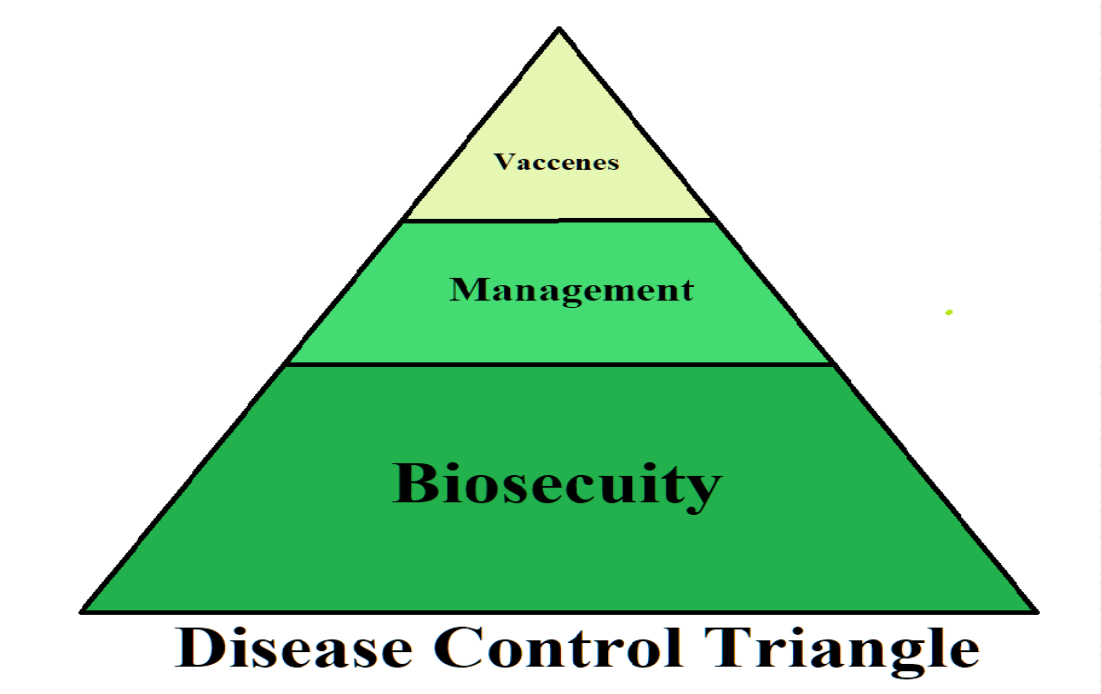
- **The litter is the bedding of the chicken house. In addition to standing and sitting, chickens like to peck at the letter.**
- **The litter quality and condition in chicken houses has an impact on their intestinal health as well as their environment throughout the production period.**
- **Wet litter increase ammonia level in chicken house which can cause bad health problems that predispose to respiratory disease.**

Notice the conjunctivitis, congestion and injury around the eye as a result of itching due to high ammonia concentration in the hens house

Litter Management cont.

- The main reasons of wet litter are:
- Bad ventilation
- High salt content in feed or drinking water, which lead to increase water consumption and wet drooping.
- Cold house temperature which reduce water evaporation from the letter.
- Material used as litter and its depth.
- Increase relative humidity of external air.
- Problems of drinkers and water lines.

The disease control triangle, illustrate, the importance of Biosecurity over vaccination program and management.



Poultry Biosecurity

Biosecurity is a program used to safeguard poultry from the introduction and spread of disease-causing organisms.

Biosecurity is the first and most important wall to prevent exposure to pathogenic organism, and protecting chickens from disease producing organism.

Biosecurity is the key factor to insure success of modern poultry production.
It is about keeping what is inside the barn in, and what is outside the barn out.

Biosecurity is a multi aspects health plan that include isolation, vectors and contaminated objects control , mortality and manure management, in addition to cleaning, disinfection, and water sanitation.

Common sources of infection

Chickens can be infected with pathogenic organisms via direct contact with infected birds, and/or indirect contact through exposure to contaminated people, animals or items.

The most common sources of infections:

1- Infected wild or domestic birds .

2- Wild or domestic animals (e.g. Mice, rats and dogs)

3-Vermin (e.g., rodents and insects)

4-Contaminated people carrying the virus on their hands, clothing, footwear and hair.

Common sources of infection, cont

5- Contaminated vehicles and other farm equipment

6- Contaminated poultry equipments (e.g., Debeaking machine, vaccination machine and needles feeders and waterers.

7-Contaminated water, feed, bedding, soil and manure

8-Airborne dust, dander and feathers.

The ultimate goal of Biosecurity programs is to control and/or minimize these sources of contamination.

The reasons for the importance of accomplishing a disease free chickens, is because if a disease outbreak happen it could result in:

1- Reduced performance lead to loss of profitability/income.

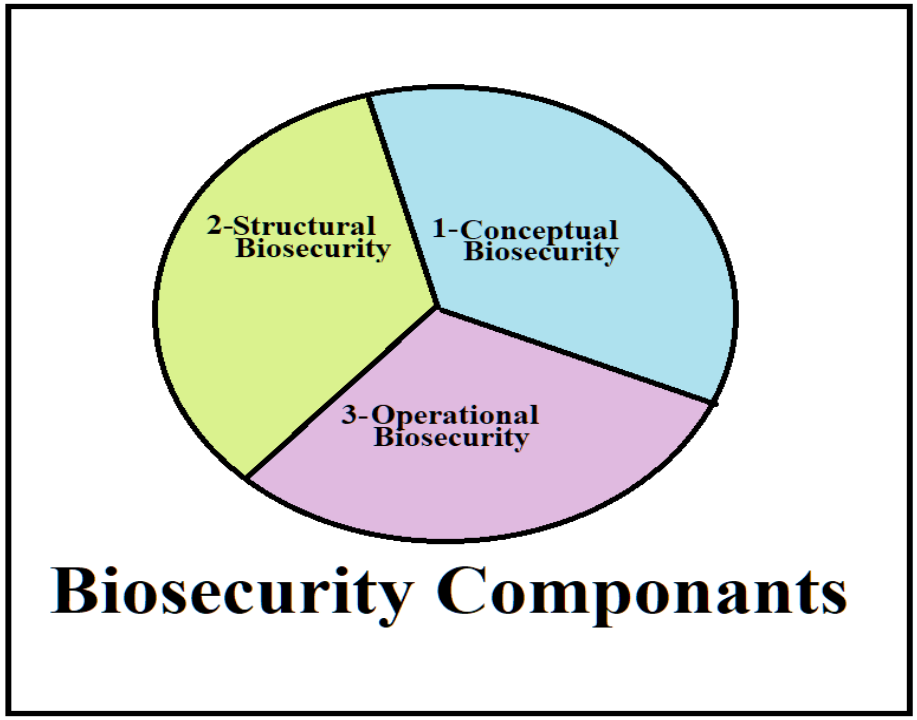
2- May require to get rid of all chickens.

3- May not meat market expectation.

4-May not meet the requirements to get certification for exportation.

5- Food safety to peoples, for example salmonella infection.

The Biosecurity Components



Conceptual Biosecurity

- Refers to the geographic location of the farm.
- a-How close to other poultry farms.
- b- Major roads that move poultry products .
- c-Open water and flyway that bring wild birds.
- The higher the poultry density in the area the higher the for need stronger biosecurity.
- The more isolated farm, the less chance of diseases being introduced to the poultry houses.

Structural Biosecurity

- The biosecurity part that deal with structure of the farm like design ,fence and showers and how they are built to keep diseases out.
- Is the poultry house open or close, the floor concrete or not, Rodent proofing fencing around the farm, one way showers and efficient car wash .
- The design of the facilities must permit easy cleaning and disinfection.

Operational Biosecurity

- It refers to the daily routine procedures which involve:
- a-Personal and vehicle entry into the farm.
- b- Decontamination procedures.
- c- The movement of live birds, eggs, equipments and other products to other building like hatcheries, and processing plant.

Key Components of good Biosecurity

- 1- Commitment of all people working in the farm to follow the program.
- 2- The Biosecurity program bust be obligatory.
- 3- The program must be practical.
- 4- Cost effective.
- 5- Change of clothes (overalls) and shows/boots, and having a dirty and clean areas.
- 6- Education is important.
- 7- Regular review of the Biosecurity programs

(Auditing).

Biosecurity measures to ensure good health of Chickens

- 1- Keep visitors to minimum. Visitors should follow Biosecurity rules of the farm.
- 2- Try not to visit other farms. If necessary follow Biosecurity rules.
- 4- All pets out of poultry house.
- 5- Effective rodent and insects control.
- 6- keep areas around poultry houses and feed bins clean.
- 7-Collect and dispose dead chickens daily.

Continuous monitoring of chickens health status

- 1- A daily flock check is important for early identification of sick chickens .
- 2- Signs like, high mortality, drop in egg production, reduced feed/water consumption, sneezing , diarrhea, or any other abnormal signs.
- 3- Early detection of abnormal clinical signs can limit the effect of a disease outbreak and allow for a faster return to normal operation.

Principles of Vaccination

- 1- Vaccination is the base for disease prevention.
- 2- Vaccination programs depend on type of production.
- 3- Required immunity, long-term or short-term protection.
- 4- Mono or polyvalent vaccine is required.
- 5- Determination of the method and age of vaccination.
- 6- Serological monitoring testing program for level of immunity.
- 7- Vaccines should be handled and applied correctly.
- 8- Vaccines are different therefore they should be handled, stored transported and reconstituted according to the manufacture product label

Types of vaccines:

- 1- Live vaccines, can be freeze-dried or frozen in liquid nitrogen.
- 2- Recombinant vaccines, are live virus vaccines fabricated using a vector virus, like fowl pox virus.
- 3- Inactivated (killed) vaccines containing inactivated virus or bacteria, suspended in oil adjuvant emulsion.
- 4- Coccidiosis vaccines.
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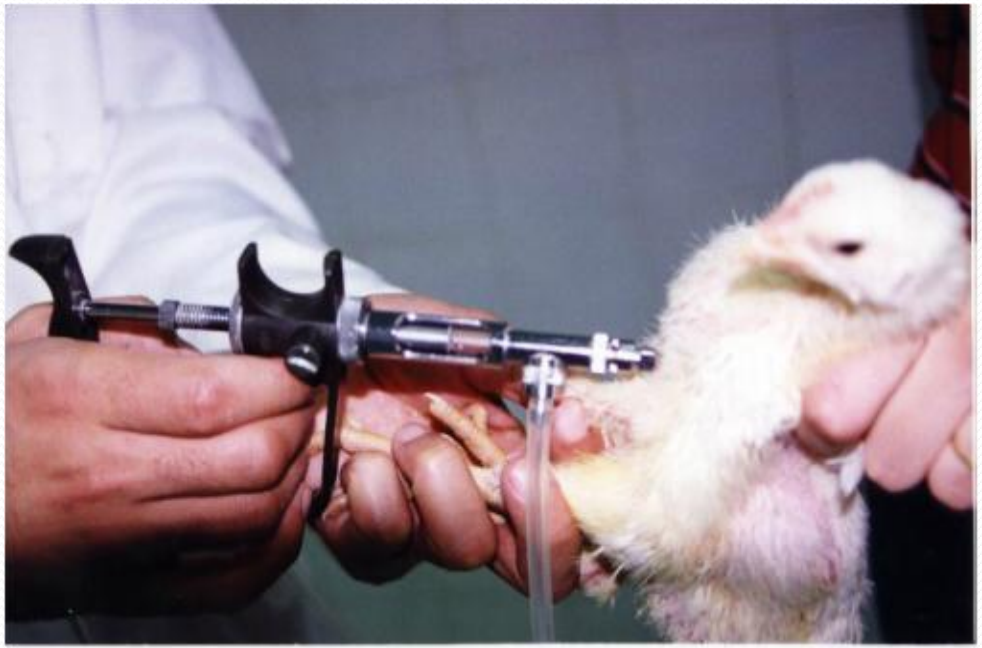
Methods of vaccines administration

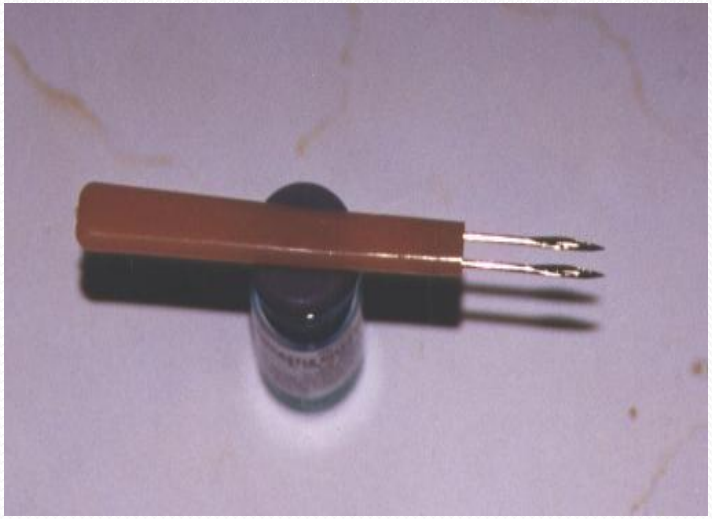
- 1- Aerosol (Spray) for example in hatchery spraying cabinet or in poultry house.
- 2- Drinking water vaccination is an efficient method to deliver certain live vaccines in poultry house.
- 3- Individual administration of vaccine to each chicken in the flock. This can be performed at the hatchery or in chicken house by injection, wing web eye-drop or In ovo.

Vaccination by Intraocular and by drinking water methods



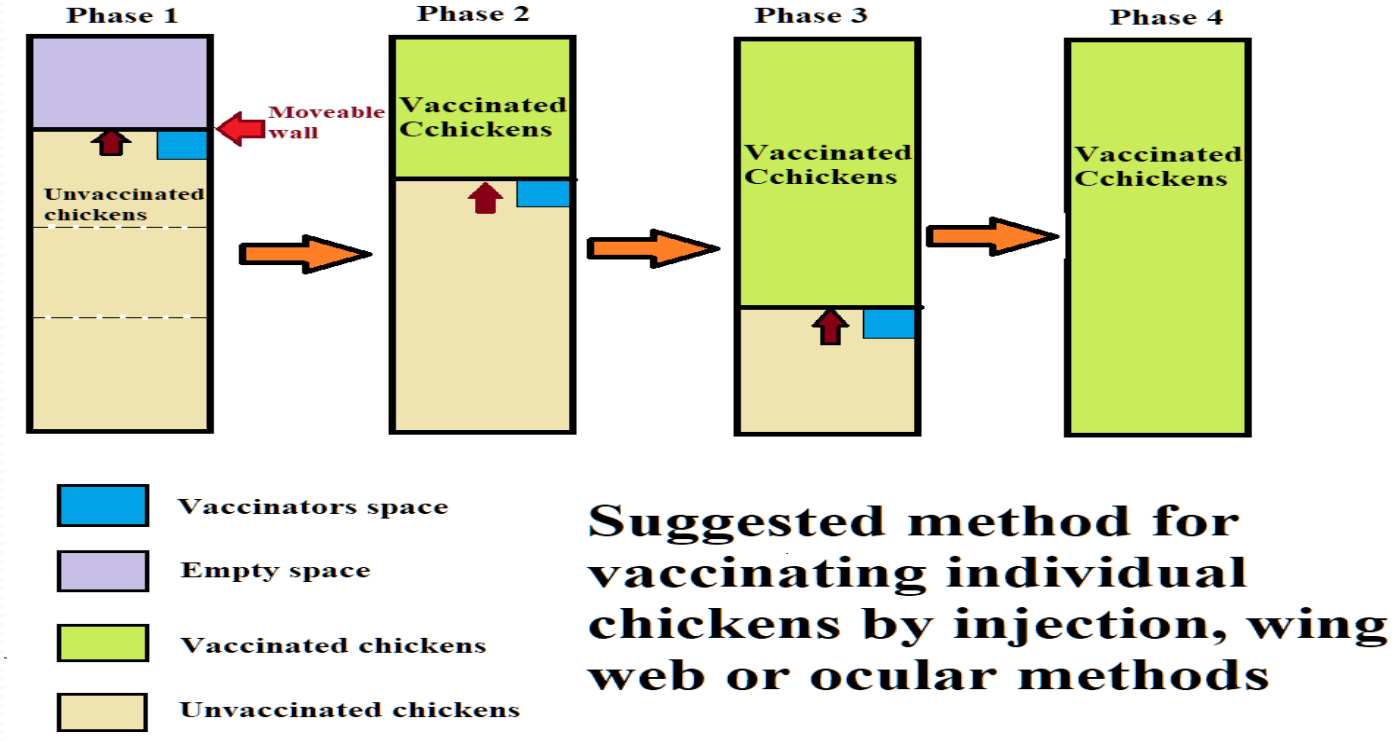
Vaccination by Intramuscular method

Vaccination by subcutaneous method



Wing Web vaccination method

Suggested Method of Individual Vaccination



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