Broiler Feeding and Management Technology

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COMMERCIAL BROILER FARMING

- Broilers today has emerged as the fastest growing segment for poultry industry with the increased acceptance of chicken meat in city, town and villages, the demand for broilers is growing in a fast pace.

- **Broilers characteristics :**

i) About 6 weeks growth cycle
ii) Grow from about 40 grams to more than 3000 grams
iii) The feed ratio about 2.1:1

COMMERCIAL BROILER FARMING

- In order to get maximum benefit from this industry, a proper knowledge on its technicality, such as breed, housing, feeding, management etc is essential.

Broilers Selection

- Combined with the market form, broilers with strong adaptability, good meat quality, fast growth rate and good marketing channels should be selected.

Broilers Selection

- On this basis, chicks with clean, shiny and neat appearance feathers, qualified weight, no fecal pollution and strong earning power are selected.

Preparation before arrival of chicks:

Spray disinfection

- Spray sanitisers on litter and entire poultry house.
- Fumigation of poultry house with suitable agents

Check equipments

- Removal of previously used litter and wash the house equipments.
- Clean water pipelines
- Check all the appliances, such as feeders, automatic water dispensers, thermal insulation equipment, etc.

Preparation before arrival of chicks

- After the cleaning and disinfection period, all house equipments should be in place 3 days before the arrival chicks

- 24 hours before the arrival of chickens, the temperature should maintain 32 ~ 35 ℃.

Preparation before arrival of chicks

- At the start, the chicks does not have a thermal regulatory system.
- Its comfort depend totally on the control of the exterior parameters, management skills of the grower and the quality of the house construction and equipments.
- The control of environment is an understanding of multiple interactions.

Preparation after chicks arrive

- Firstly, observe the behaviour, this is followed by individual handing of the chicks. feel the legs, check that there is food in the crop, check and record the temperature, humidity, air speed, the heating and ventilation system.

Preparation after chicks arrive

When the chicks arrive, the drinking water temperature should be 25-27 ℃.

It is important for chickens to drink water as soon as possible, and add sugar to the water properly for chickens.

Preparation after chicks arrive

Refilling and cleaning of the drinkers should take place several times per day during the first week.

Adjust the height of the drinkers and the water level to avoid spillage.

After this period, round type and through drinkers should be cleaned daily.

Adjustment of the nipple drinker height and the water pressure varies between the different types of drinkers available in the market.

From the first day, record the daily water consumption.

Environmental conditions of chicken house

- The body temperature of newborn chicks is between 39.4 ~ 41.1 ℃, with less subcutaneous fat, relatively less feather, poor heat preservation ability and poor energy production ability.
- After 28 days of age, the feathers began to grow, the thermoregulation mechanism began to improve, gradually adapted to the external environment, and the metabolism of broilers was also very fast.

Temperature

- The ambient temperature of 1-day-old chicks was controlled at 33 ℃ ~ 34 ℃.
- At the age of 7 days, the ambient temperature decreased to 30 ℃ ~ 31 ℃.
- with the increase of chicks' age, the temperature decreased by 2 ℃ ~ 3 ℃ every week, and the temperature in the chicken house was controlled at 19 ℃ ~ 20 ℃ at 35 days of age.
- In particular, it is emphasized to gradually reduce the ambient temperature of the chicken house so that the daily temperature difference of the chicken house does not exceed 1 ℃, so as to avoid cold stress.

Temperature

Age (days)	Suitable Temperature (℃)
1-7	32-34
8-14	30-32
15-21	27-30
22-28	24-27
29-35	21-24
35-42	21

Temperature

- When the temperature is high in summer, taking the necessary cooling measures, and it is better to feed chickens in the morning and evening.
- If the temperature is too low, the chickens is easy to squeeze each other for heating, increase consumption, reduce the feed utilization rate, prone to diarrhea or respiratory diseases.
- make cold insulation work according to the temperature changes in time.

Humidity

- The relative humidity range of broilers is 50%-70%.
- Before 10 days of age, the relative humidity is required to be higher, up to 70%, which is beneficial to promote the absorption of egg yolk in the abdomen and prevent dehydration of chicks.
- After 10 days of age, the relative humidity should be less, which can be kept at about 65%, so as to keep dry in the shed.

Temperature and Humidity

- The room temperature is high, resulting in low relative humidity, dry air, resulting in the occurrence of colibacillosis.
- When the relative humidity in the room is too low, water spraying and other methods can be used.

- It is very important to control the humidity in the middle and late stage of broiler.
- In the hot and rainy season in summer, humidity in the chicken house is one of the most important factors.
- If the humidity is too high, a large number of pathogenic microorganisms will reproduce, broilers will have a variety of diseases.
- Therefore, the ventilation in the house must be done well, and the relative humidity in the house must be maintained at 45% ~ 60%.

Lighting

- Use 23-24 hours light for the first 3-5 day to encourage feed and water consumption.
- The aim of illumination is to prolong feeding time and promote growth rate of broiler chickens.
- In the early stage, strong light can help chicks get familiar with the environment and fully take food and water.
- In the late stage, strong light is harmful to broilers and hinders their growth, while weak light can make the chickens quiet and conducive to their growth.

Density

- The density of feeding is too high, the air quality decreases, causing infectious diseases, resulting in uneven weight development.
- The feeding density is too small, the utilization rate of shed is low, and the production cost is high.

Age (days)	Broilers/m2
1-7	40
8-14	30
5-21	27
22-28	21
29-35	18
36-42	14
43-49	10-11
50-56	9-10

In cold winter or early spring, in order to keep warm, the feeding density can be appropriately increased and the breeding space can be saved.

If the feeding density is too high in hot summer, the temperature in the house will rise, so it is necessary to appropriately reduce the feeding density.

Ventilation

The house should be designed with cross ventilation to allow fresh air to circulate inside the shed by providing wire mesh net on two opposite sides.

Poultry feed

- Feed is the major cost of poultry production which significantly affects the production performance of the birds.
- So feed and feeding is the most important consideration for efficient poultry farming.
- Improper feeding not only affects the production performance but also causes several deficiency diseases.

- Poultry feed
- Also, the feed needs to have all the nutrients (carbohydrates, protein, fats, minerals and vitamins) in right proportion.
- In addition some additives to facilitate digestion and growth is often added in commercial feed.

Scientific feeding

- Scientific feeding and brooding period (0 ~ 3 weeks):
- The objective of period is to establish good appetite and achieve maximum early growth.
- The target is to achieve a seven-day body weight of 170 g or above.
- The feeding should be limited properly for 2 ~ 3 weeks to prevent overweight, so as to reduce the probability of ascites and leg diseases.

Feed requirements:

- **1)** The Starter represents a small proportion of the total feed cost and decisions on Starter formulation should be based on performance and profitability rather than cost.
- **2)** The digestible amino acid levels are important aspects and must be considered when purchasing feed.
- **3)** In wheat-feeding areas the use of some maize may be beneficial.
- **4)** Total fat levels should be kept low (<5%) and saturated fats should be avoided, especially in combination with wheat.
- **5)** The first week should be fully fed with high-energy and high protein diet.

Scientific feeding

- Medium chicken stage (4 ~ 6 weeks):
- Adapted to the new environment.
- The target is to improve the quality of the chicken population, promote the formation of the chicken physique, so that the late grow fast, less disease.
- It is also the skeleton forming stage, and the feeding focus is to supply with balanced nutrition.

Feed requirements:

- Appropriately increase the feed volume, reduce the concentration of energy and protein, about reduce 10%.
- In this stage, the protein in the feed should reach more than 19% and the energy should be maintained at about 13.38 MJ / kg
- But all of vitamin, microelement and mineral should meet or exceed the requirement.
- Feeding method: regular feeding 3 times a day, pay more attention to exercise, so as to improve the activity of broilers and reduce disease occurrence.

Scientific feeding

- Fattening period (from 6 weeks to slaughter):
- The growth rate is the fastest.
- **The target is** to promote digestion and absorption of the chickens, reduce movement, reduce energy consumption, make the feed conversion rate to achieve the maximum。
- In order to accelerate weight gain, the energy concentration of diet should be increased during feeding.

Feed requirements:

- Provide higher quality feed.
- the diversification of raw materials and low fibrosis.
- Adding 3% ~ 5% animal and vegetable fats, and the crude protein in the feed can be reduced to 17% ~ 18%.
- Pellets should be used as far as possible.
- Feeding times increased to 5 times, or free feeding.
- In terms of management, exercise should be reduced， and low light should be used.

Grain Feed

Corn is the most common grain feed material in poultry, and the additive proportion is usually about 50% to 70%.

It is a good energy feed with strong palatability with easy digestion

Need attention :

the essential amino acids: tryptophan, lysine, methionine is low, so it is necessary to supplement amino acids to meet the nutritional requirement.

Wheat

Also considered as energy feed
Instead of 15%¯50% corn

Broilers:

<15% wheat

15%¯20% wheat + Enzyme preparation

Soybean is the most common protein feed in poultry.

The ratio of soybean could reach to 52% in poultry feed.

The cottonseed cake proportion in the feed is generally not more than 10%.

For broilers, the maximum amount rapeseed cake is 20%.

Examples:

- Corn, which is low in lysine
- Soybean meal, which is low in methionine
- By themselves neither corn nor soybean meal can provide enough essential amino acids to maximize performance.
- But when the two are combined, they provide adequate amounts of the essential amino acids and are said to complement each other.

Fish meal is the most common animal derived protein feed material in poultry, especially for young poultry, and the additive proportion is usually about 5% to 12%.

■ Protein levels

Protein levels should be reduced to limit the risks of litter deterioration and nitrogenous excretion. This is possible by using a wide range of raw materials, which contain complementary A.A. used in association with the synthetic amino acids (lysine, methionine and threonine).

Some margin of security should be taken into account for the protein levels.

Age (days)	Protein level	Metabolisable energy (M.E.)	M.E./Protein level
0 – 10	22	2 900 – 2 950	132
11 – 20	21	3 000 – 3 050	143
21 – 33	20	3 100 – 3 150	155
34 – 42	19	3 100 – 3 150	163
+ 42	17	3 150	185

- Salt
- Salt is the source of sodium and chlorine, and the dosage of chicken diet is 0.25%-0.3%, adult chicken diet is 0.3%-0.4%.

Vitamins

- The essential vitamin requirement of broilers is very small but indispensable, and deficiency can cause many diseases.
- Due to the influence of various factors in the process of breeding, vitamin deficiency is easy to be VA, VD, VC, VE, and B vitamins (mainly VB1, VB2, VB12), followed by folic, niacin, pantothenic acid , *etc.*
- Lack of certain vitamins can cause growth restriction in chickens and easily induce other diseases.

Water is also important for broilers

- Ensure clean drinking water: maintain growth speed and production performance, improve feed utilization rate.
- In general, the water supply of chickens is related to feed, the water supply of chickens should be 2 to 2.5 times the quality of dry feed.

Water is also important for broilers

- Water occupies a large proportion in the chicken body, and the water content in the chicken body can be as high as 70%, especially in chickens less than 1 week old, the water content in the body is 85%
- When the temperature is higher than 20 ℃, drinking water began to increase,
- The temperature increased from 20 ℃ to 35 ℃ ,the amount of water consumed increased 1.5 times.

Damage of water shortage to chicken body

- Lack of water will affect the feed absorption, resulting in thick blood, temperature rise, hinder the growth and development, if the body water shortage 10%, it can lead to death.
- Lack of water on the impact of chicken body weight is very fast and obvious, generally in 8h will show up, will slow down the growth rate of chickens, this is particularly obvious in broilers.

Attaches great importance to the disinfection

- Disinfection is a key link of chicken success or failure.
- Before chicken arrive, to be thoroughly disinfected, but also must strengthen the usual sanitary disinfection work, field area door, chicken house door to have a disinfection pool, often maintain the effective concentration of disinfection water.
- Water fountains are washed and disinfected daily and then rinsed clean.
- Feeding managers are required to wear overalls, outsiders are restricted from entering the airport, and chicken trucks are not allowed to enter the farm.

Strengthen disease prevention

- Broilers have rapid growth and sensitive nature, especially in the large-scale breeding mode, the feeding density is large, and they are more prone to a variety of diseases, which affects the growth and production of broilers.
- We should have strict disinfection awareness and realize the importance of disinfection.

Strengthen disease prevention

- A disinfection pool shall be set at the gate of the farm for disinfection of incoming and outgoing vehicles.
- Ultraviolet disinfection room shall also be set at the door to facilitate breeding personnel or other outsiders to disinfect before entering the chicken house.
- The sanitation and cleaning of the breeding environment should be strengthened, and the environment of the farm and the chicken house should be disinfected regularly.

Strengthen disease prevention

- Once the chickens get sick, they should be isolated in time, and choose non-toxic and less residual drugs for treatment.
- Do not use drugs blindly, otherwise it will not reduce the condition of broilers, but also increase the treatment cost.
- The chickens should be immunized in the whole group, so that the broilers can obtain higher and more sustainable immunity.

Scientific prevention

- According to the local epidemic situation, develop immunization procedures, timely vaccination of various vaccines as required. The selected vaccines should come from a licensed manufacturer.

Vaccination schedule in Broilers:

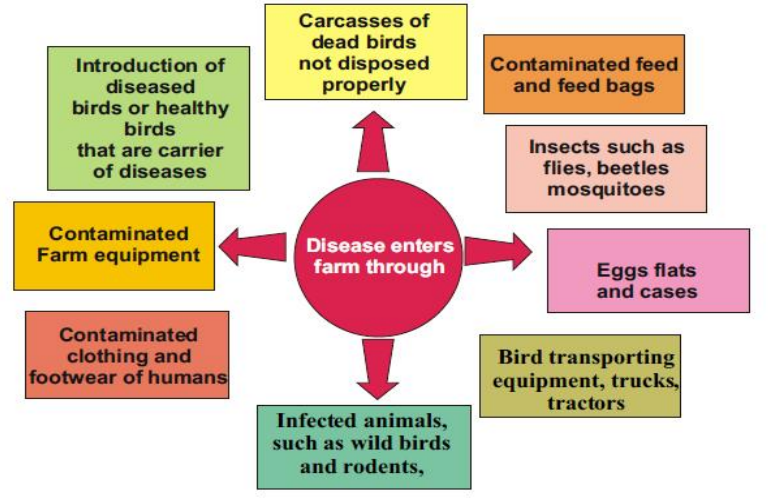
Disease	Age
Marek's	1st day (generally given inhatchery) 0.2ml s/c
Ranikhet	5th day (f-strain)
Gumboro / IBD	7-9th day
Gumboro / IBD	16th 18th day (Booster dose)
Ranikhet	30th day (f-strain)

Bio-security measures in a broiler farm

- bio-security is a practice designed to prevent the spread of disease onto your farm.

Bio-security has three major component:

1. Isolation
2. Traffic control
3. Sanitation



Bio-security measures in a broiler farm

Bio-security measures:

1.Fencing

2. Keep visitors to a minimum

3.Limit visitations to other poultry farms

4 keep all animals and wild birds out of poultry houses.

5. Practice sound rodent and pest control programs

6. Inspect flocks daily and recognize disease symptoms

Bio-security measures in a broiler farm

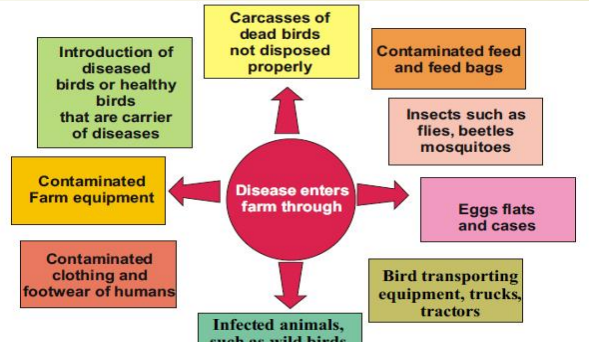
7. Good ventilation and relatively dry litter.

8.Keep areas around houses and feed bins clean.

9. No exchange of feed and equipments.

10. Disinfection and sanitisation of poultry house and equipments.

11. All-in –one system of rearing should be followed to ensure minimum disease problem.



THANK YOU

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