



Feeding and Management of Laying Hens

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Outline

1. Physiological Characteristics of Laying Hens

2. Key Points of Feeding and Management of Laying Hens



1. Physiological Characteristics of Laying Hens

Three stages

- Pre-laying period
- **laying period**
- late laying period

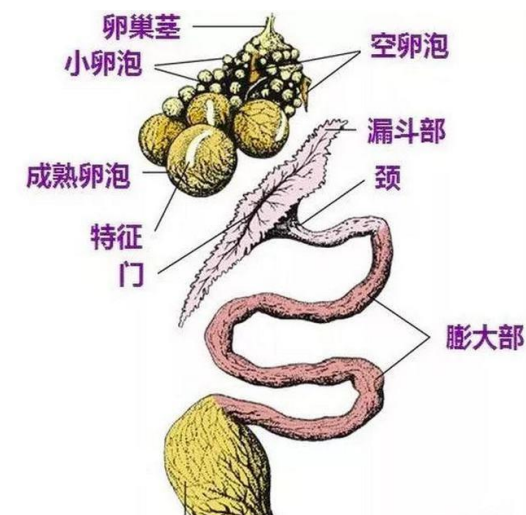
Four stages

- Pre-laying period
- **Early laying period**
- **Medium laying period**
- Late laying period



- **Pre-laying period (from 18 to 21 wks), sexual maturity period.**
- **Rapid development of ovaries and fallopian tubes;**
 - ✓ **The right part of the two ovaries and two fallopian tubes slowly degenerates at the beginning of development.**
 - ✓ **The main function of the ovary is to produce yolk, which matures and falls into the fallopian tubes.**
 - ✓ **Fallopian tube is not only the semi-open pipe for transporting eggs to the outside of the body, but also the processing place for the final molding of eggs.**
 - ✓ **It takes 24-25 hours to go from yolk to a complete egg in a 60-90 cm pipe.**

- The ovary weight at 18 weeks is about 4 times that at 10 weeks, but 30 times and 42 times that at 19 weeks and 20 weeks, respectively.
- The ovary weight is about 7 g before sexual maturity and about 40-60 g at maturity.
- Fallopian tubes quickly thicken, lengthen and gain weight.
- The fallopian tubes are 8-10 cm long before and 50-60 cm long after sexual maturity.



➤ Early laying period (about 21 to 22 weeks)

- Lay small eggs.
- The egg laying rate rose rapidly.
- Physiological fluctuation; Sensitive to environmental changes.
- Strong physiological stress easily leads to the occurrence of conditioned diseases.



➤ **Medium laying period, peak laying period.**

- **Duration is usually 4-6 months (variety varies).**
- **The laying rate can reach about 50% in the fourth week after laying; Peak egg production can be reached within 3-4 weeks;**
- **The laying rate is about 90%-97% during the peak period.**



- **High metabolic intensity.**
- **High reproductive performance.**
- **Feed intake increased with the increase of laying rate.**
- **Dietary calcium and phosphorus requirement are high.**



➤ Late laying period

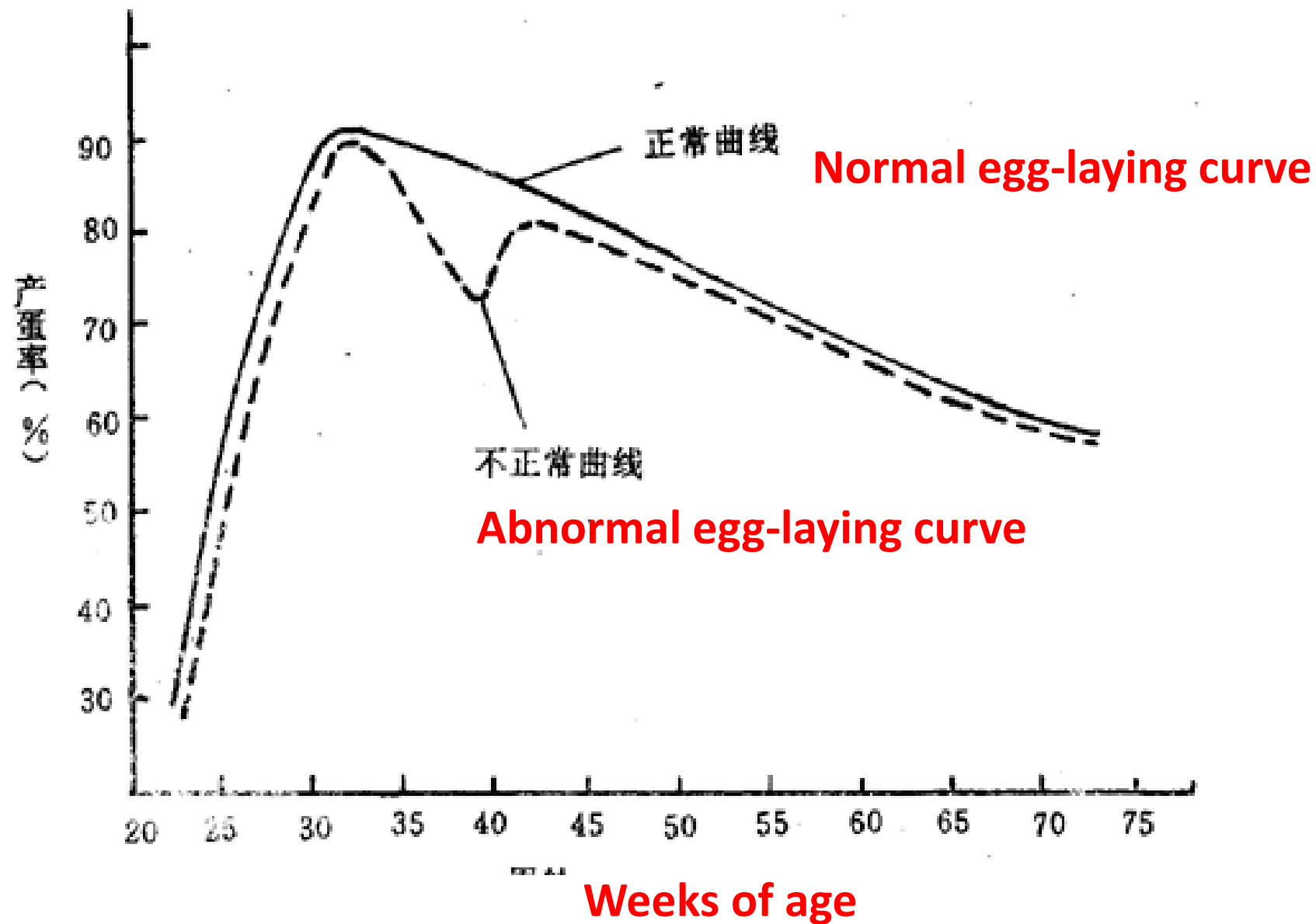
- Lay larger eggs.
- Laying rate decreased gradually in this period.
- The feed intake isn't decreased.
- Prone to deposit body fat and get excessive egg weight.



Laying rate changes at different stages

- Laying hens generally start laying at 21 weeks of age, and the laying rate almost doubles every week: 5%→10%→20%→40%.
- When it reaches 40%, the rate increases by half: 40%→60%→80%.
- At 27-29 weeks of age, it enters the peak of egg production, and the laying rate can reach more than 90%.
- The peak egg production may maintain 10-22 weeks according to the breeds and conditions.
- After the peak laying, it begins to decline, until 65-70% after 72 weeks of age, which can be culled.

Egg-laying rate



2. Key Points of Feeding and Management of Laying Hens

2.1 Feeding and management in pre-laying period

➤ Clean and disinfect chicken house and equipment

- Maintain, clean and **disinfect** the chicken house.
- For the old chicken house, thoroughly clean the chicken manure adhered to the walls and floor with water, as well as the dust on the doors, windows and roof beams.
- Chicken cages, equipment, utensils, etc. should be sterilized by spraying disinfectant after washing with water.
- After drying, the chicken house was fumigated with formalin and potassium permanganate in a ratio of 2:1.

➤ Facilities provided

- Equip with egg laying boxes in a 4-6:1 ratio according to the number of hens in ground raising or free ranging . Put bedding material in the egg laying boxes.
- Fake eggs can be placed in the egg boxes before egg laying to induce the hen to lay eggs.



➤ **Group transfer appropriately**

- **Grower chickens should be transferred to egg laying houses after 18 weeks of age.**
- **It usually takes 2-3 weeks to adapt to the new environment and facilitate the egg production.**
- **A selection of chickens should be made before transferring groups, weeding out those chickens that are too small, too heavy and sick.**
- **In order to reduce stress, group transfer had better be arranged in the evening or at night.**
- **2-3 days before and after group transfer, electrolytic multivitamins can be added into the drinking water.**

- **Pay attention to the chickens whose weight is not up to standard or exceeding the standard**
- **The higher the uniformity of the group, the higher the simultaneous egg laying, and the faster the increase in laying rate.**
- **The uniformity had better reach about 90% in the late growing period.**



- **The chickens whose weight is not up to standard or over standard should be isolated and raised separately.**
- **For the chickens with lower body weight, should be properly increased daily feed, until up to the standard.**
- **It is not advisable to reduce the daily feed intake of overweight chickens.**
- **It is better to control their daily weight gain until their body weight reaches the normal standard.**



➤ Adjustment of feed nutrition

- Pre-laying feed was used from group transfer to 21 weeks of age.
- Appropriately increase the levels of dietary crude protein, calcium and vitamins in feeds.
- Change the feed in a gradual way.
- The **method**: $\frac{2}{3}$ of the previous feed and $\frac{1}{3}$ of the present feed were mixed for 2 to 3 days; Then $\frac{1}{3}$ of the previous feed and $\frac{2}{3}$ of the present feed were mixed for 3 to 4 days, and then change to the present feed totally.

- **Before laying, increasing the lighting should be matched with the feed changing.**
- **Changing feed should be done after increasing lighting for a week.**
- **If there is no pre-laying feed, seeing the "first egg", or two weeks before laying (about 20 weeks), to take care of some chickens that have laid eggs, add shells or calcium carbonate pieces or pellets to the feeding trough, let the chickens eat freely.**
- **When the laying rate of the flock reaches 5%, the grower feed can be changed to the layer feed.**

➤ lighting increase time

- The lighting increase time should be based on average body weight at 19-20 weeks of age.
- If the average body weight reaches the standard, the light exposure should be extended for 1 hour per week from 21 weeks of age until it is increased to a constant 16 hours.
- If the body weight is not up to the standard at 20 weeks of age, supplementing light can be delayed for one week.

➤ **Provide suitable environmental conditions**

- In summer, the house temperature had better be controlled below 30°C;
- In winter, the house temperature had better be above 10 °C, indoor air should be keep fresh, and the humidity should be about 65%.
- Strengthening sanitary management and disinfection measures



➤ Observe the chickens

- The farmers or keepers should observe the condition of chickens every day, timely find and cull the sick and disabled chickens, take out of dead chickens.



➤ Deworming

- **Spraying drugs can be used to treat lice and mite parasites on the body surface.**
- **For parasitic parasites in the intestinal tract, feed mixed with medicine is taken.**
- **An oil vaccine injection of the Newcastle diseases to prevent post-natal outbreaks of Newcastle disease and the economic losses.**



➤ Immunity

- Immunization procedures should be developed according to the local condition and adjusted by the actual conditions.
- Vaccines should be stored and transported at low temperatures, otherwise they will soon become ineffective.
- After immunization, the remaining unopened vaccines cannot be stored and used again, and the use of expired vaccines does not prevent disease.



➤ **Egg collection and storage**

- **Collect eggs once a day in the morning and once in the afternoon.**
- **Collect eggs twice in the morning and twice in the afternoon in summer.**
- **Remove dirty eggs and cracked eggs.**



- Eggs should be stored in an air-conditioned egg warehouse and kept clean and tidy.
- The temperature ranges from 0°C to 25°C.
- When eggs go out of the egg warehouse in summer, eggs should be put in the temperature buffer room and gradually return to the normal temperature.
- Egg warehouses should be disinfected once a week.



➤ **Keep records.** The daily records of the chicken flock are the direct basis for finding the reasons of problems.

- The number of live chicken, the dead and culled chicken;
- Feed consumption and immunity;
- Number of eggs and the broken eggs;
- Indoor temperature;
- Egg weight and body weight;
- A sudden loss of electricity and water, etc.



2. Feeding and management in the early laying period.

- There was a high correlation between egg weight at the early laying period and annual egg production.
- To make egg production level to meet the requirements of the breed standard;
- Develop the genetic potential;
- The annual egg laying production will decrease with the decrease of peak laying.

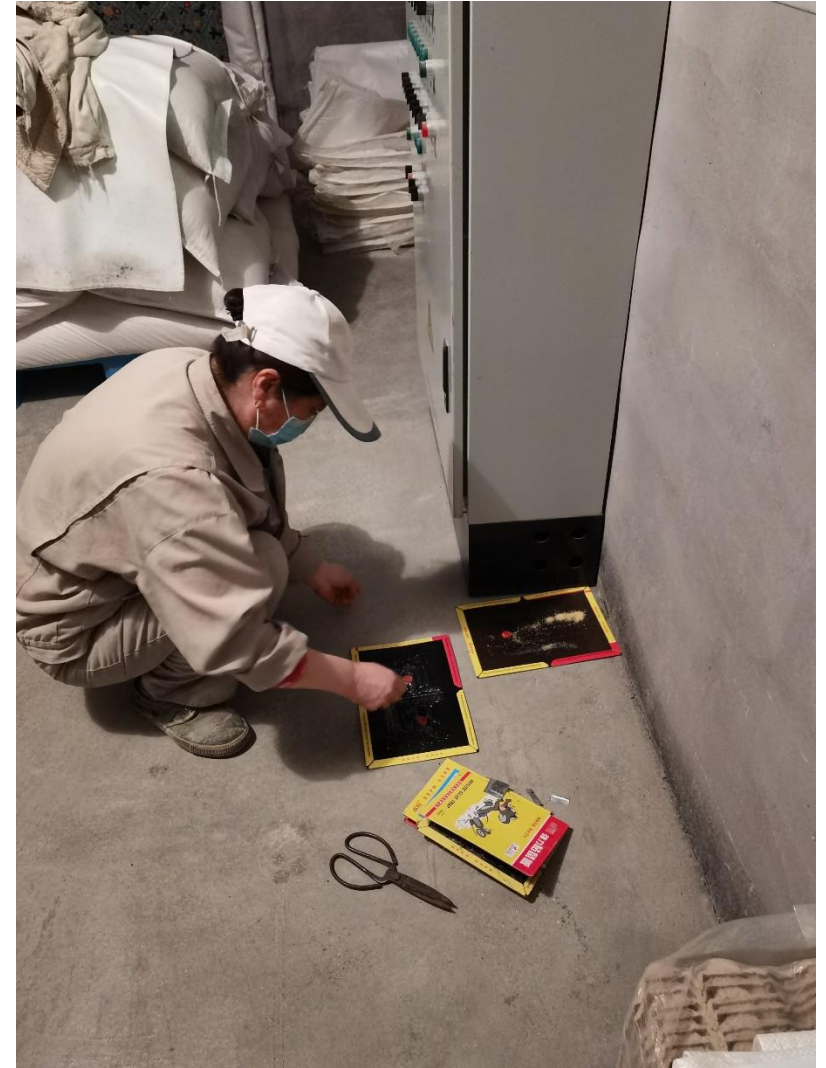


➤ To reduce stress

- The suitable temperature of chicken house is 18-26°C.
- Minimize the factors that can cause stress: high temperature, low temperature, poor ventilation, excessive stocking density, improper use of disinfectants, noise, etc.
- Maintain the relative stability of the house environment as far as possible
 - ✓ Fixed the keeper and the clothing color;
 - ✓ Feed and pick up eggs regularly;
 - ✓ Turn on the fan and clean the chicken house regularly.



- **Gravel roads were laid around the chicken house to prevent the mouse from entering;**
- **Seal doors, windows and air holes with barbed wire to prevent cats, birds and mouse from entering.**
- **Rat sticker can be used in the house.**
- **Fireworks and firecrackers are strictly prohibited around the chicken house;**
- **Feed processing, loading and unloading had better be away from the chicken house.**



➤ Lighting program

- The light duration was increased to 13.5 -14 hours, then alternately increased by half hour or 1 hour every week, remaining 16-17 h per day after reaching the peak laying period.
- It is best to provide the artificial lighting before dawn each day.



➤ Nutritional requirement

- Formulate the feed according to the breed's nutritional requirement.
- Provide a high protein feed with a recommended crude protein content of about 16%.
- When egg laying rate is 5%, transition to laying feed should be made, and when laying rate reaches 20%, it should be completely replaced with laying feed.
- The transition time of laying feed should not be too early, otherwise the egg production after 52 weeks of age will be affected.



➤ Weigh the body weight regularly

- To know the uniformity as soon as possible;
- Weight increases too fast means that too much feed is used.
- Weight loss indicates poor health or too little feed.
- Weight gain will not be noticeable when egg production reaches about 75%.



3. Feeding and management in the middle laying period

- The laying rate should not be increased too quickly.
- The increase of growth rate and feed amount can easily lead to overweight and affect later egg production.
- The increase of rectcele and salpingitis can cause the increase of mortality in chickens.



➤ Feeding

- Chickens are generally free feeding from the start of egg production until two weeks after peak egg production.
- The feed quantity should be adjusted according to the actual egg production situation of the chickens. Generally, the increase of feed should precede the increase of egg production.
- Maximum feed should be given when egg production reaches 50%.





- **Feed should not be reduced in peak egg production.**
- **After the peak, a 3% reduction in egg production results in a 1-2 g reduction in feed intake.**
- **If egg production drops rapidly and weight is lost, feed restriction should be stopped.**
- **Generally, laying hens are fed 2-3 times a day. Mix 2-3 times a day.**
- **In the later stage of laying eggs, the feeding of hens should be properly restricted to prevent obesity.**

➤ Disease prevention

- Vitamin and trace elements should be properly added in feed during peak stage of egg production.
- Probiotics can be added in drinking water to regulate intestinal flora.
- At the age of 260-270 days, supplementary immunization was performed with 2-3 times of ND+H52 vaccine in drinking water.



➤ Nutritional requirement

- To control egg weight and body fat deposition, dietary protein level was reduced and feeding amount was controlled.
- Crude protein level is 15%-15.5%, Ca content is increased and P content is decreased, so as to adjust the dietary Ca and P ratio.



- **When supplementing calcium, it is best to use 50% powdery, 50% granular calcium, which can help digestion and absorption, and can be stored in the egg.**
- **Feeding proper soda can increase the laying rate, increase eggshell strength and reduce broken eggs.**
- **Adding some insoluble sand to the feed helps digestion and improves feed conversion.**



➤ **Select the low-yielding chickens timely**

- **There is a gradual increase in the number of discontinued or low-yielding chickens, which, if continued, will obviously results in a great deal of waste of feed and labor.**
- **At 40 to 60 weeks of age, the chickens with dry and atrophic crests, pale complexion and dark yellow beaks and tibias should be eliminated.**



5. Pay attention to biosafety

- **Adopt an “all in, all out” system, try to ensure that each chicken house only raises chickens of the same age.**
- **Regularly disinfect the chicken house, cage, feed trough, feeding space, surrounding environment and feces.**
- **When an epidemic occurs, the concentration and frequency of disinfection should be appropriately increased.**
- **The drinking water in the chicken farm is disinfected with bleach powder or other water purification agent, and water samples are taken regularly for inspection to ensure that the bacterial content does not exceed the standard.**

- **General cleaning once a day, disinfecting once every half a month.**
- **Strengthen the chicken disinfection.**
- **According to the temperature, humidity and age of chickens, carry out spray disinfection of chickens.**
- **Spray coverage to achieve 100%.**
- **Spray the chickens daily or every other day.**





Be nice to your laying hens!

Thank you!