

Poultry Management

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Poultry production

Every domesticated bird species, including chicken, ducks, turkeys, Japanese quail, guinea pigs, geese, pigeons, ostriches, and emus, are referred to as poultry. Even though it's frequently used interchangeably with chicken India is currently the third largest producer of eggs in the world. The country has been substantial growth in egg production, reaching approximately 138.38 billion eggs in the 2022-2023 period. The per capita consumption of an India is approximately 33 eggs as against the recommendation of 180 egg. Indian poultry population-435 million-4% World poultry.

A. Yolk formation: A hen's ovarian tissue manifests as a collection of small ova, or yolks. A small percentage of ova begin to grow in size as the ovary begins to operate. The vitelline membrane, a thin layer enclosing the ovum or yolk. This ovum and vitelline are further encased in a follicle, which is a highly vascularized covering of connective tissue. The ovum grows extremely slowly during the first ten days, reaching a diameter of around 6 mm. Then, some ova started to develop quickly, and in the next ten days, they reached a diameter of 40 mm. A stalk known as the follicular stalk connects these ova.

B. Ovulation: Follicle burst when the yolk or ova reached maturity. The ova are shed into the hen's body, where it is subsequently swallowed by the oviduct funnel and driven within.

C. Fertilization: The oviductal funnel is where fertilization occurs if the hen and the male mate. After two to three weeks, the sperm stay in the hen's oviduct. When sperm reach the germinal disc via the vitelline membrane of the egg, fertilization occurs.

D. Embryo formation: The development of the embryo begins immediately after fertilization; but, if the surrounding temperature stays below 82 degrees Fahrenheit, the embryo will not continue to develop inside the egg. There is no need to mate with a male if an unfertilized egg is required.

Parts of egg	Parts of egg
Percentage by weight	Percentage by weight
Shell	10-11
Shell Membrane	1
Yolk	30-35
White albumen	58-60

The chemical makeup of a poultry egg is as follows:

Parts of egg	Water(%)	Protein(%)	Fat(%)	Carbohydrate (%)	Mineral (%)
Complete egg with shell	66	12.5	10	0.5	11
Complete egg without shell	74	13.5	11	1	1
Egg yolk	48	17	33	1	1
Albumen (Egg White)	88	11	0.2	-	0.8
Egg shell and membrane	20	6	-	-	9.2

Hatching of eggs: The process of hatching occurs when a little germ inside the yolk transforms into a fluffy chick over the course of 21 days.

Types of hatching

Natural hatching: It is a procedure where a brooding hen spends the entire 21-day period sitting on the eggs. In this case, the hen's body regulates the temperature and moisture levels of the hatching eggs. Compared to artificial hatching, natural hatching produces superior

Nature and functions of poultry nutrients

These are classified into physical, chemical and biological properties. These are divided into following rules:

Water: Water is an essential part of poultry nutrients. 1.5-2.5 g water is needed per g of poultry feed.

Proteins: The poultry products are of high percentage of protein. Eg. Broiler's dressed meat has as high as 65 % protein. & egg has 50% proteins. Therefore, high quantity of proteins is required in the poultry feed i.e. 22-24 % proteins in broiler's feed and 16-17 % in layer's feed.

Carbohydrates: Carbohydrates provides energy. Poultry birds cannot digest complex carbohydrates such as cellulose. Cereal grains and their byproducts are excellent source of carbohydrates.

Fats and oils: Eggs and poultry meat have a good quantity of fats. Fats containing feeds

Location

- 1) Poultry house should be located away from residential and industrial area.
- 2) It should have proper road facilities
- 3) It should have the basic amenities like water and electricity.

Details of Open-Sided Poultry House Construction

1) House Orientation (Direction): The location of the poultry house should be such that its long axis faces east-west. By doing this, the birds won't be exposed to direct sunlight.

2) Size: Under a deep-litter rearing technique, a layer needs two square feet of floor area, whereas each broiler requires one square foot.

results. Naturally, Desi hens make the finest hatchers.

Artificial hatching: Artificial hatching is accomplished using devices known as incubators. Today's market is filled with technically advanced and efficient incubators. It is no longer necessary to incubate or brood chickens since they are so dependable and efficient. There are so many eggs being incubated at once that they naturally hatch.

such as barley, sunflower, wheat, rice bran etc. contains upto 2-5% of fats and these are sufficient for poultry feeds.

Minerals: Minerals such as Ca, P, Mg, I, Fe, Cu, Zn etc. is very essential for poultry feed. Laying hens requires extra Ca & P for the formation of egg shell. Grains and vegetables are poor source of these minerals. Therefore, extra mineral supplement is required for poultry feed. These are some mineral supplements such as: Lime stone, Bone meal, Oyster shell Sodium chloride and Potassium iodide etc.

Vitamins: About 13 vitamins are essential for poultry. There are two types of sources of these vitamins: (Natural sources and Commercial vitamin mixture).

Feed additives: These are not-nutrients but these help in: Digestion, Works as stimulant, Works as medicines, Flavoring and Help in change of texture of feeds.

- 4) Availability of farm laborers at relatively cheaper wages.
- 5) Poultry house should be located in an elevated area and there should not be any waterlogging.
- 6) It should have proper ventilation.

Thus, the number of birds to be raised determines the size of the home.

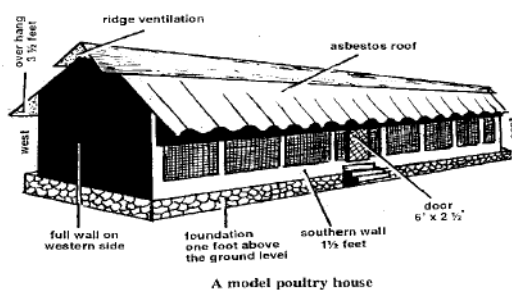
3) Length: The house's length can vary in any direction. The length of the poultry house is determined by the number of birds raised and the amount of ground available.

4) Width: In tropical regions, the width of open-sided chicken houses should not exceed 22 to

25 feet to ensure sufficient ventilation and aeration in the middle section. Environmentally regulated chicken buildings can have widths of up to forty feet since exhaust fans are used to regulate the ventilation.

5) Height: The sides should be 6 to 7 feet (eaves height) from the foundation to the roof line, and 10 to 12 feet in the center. The type of cage arrangement—three or four tiers—determines the height of cage homes.

6) Floor: Concrete flooring that is damp-free and equipped with rat-proof devices is ideal. To avoid rat and snake issues, the floor of the home



9) Roof: There are several varieties of roofs for chicken houses, such as gable, shed, full-monitor, half-monitor, flat concrete, gabled, Gothic, and so on; the gable type is more common in tropical countries like India. Depending on the cost involved, the roof of the

Systems of Poultry Housing

Poultry can be housed under different systems based on following factors

- 1) Availability of land
- 2) Cost of land
- 3) Type of farming activity
- 4) Climatic condition
- 5) Labor availability

Broadly, poultry housing systems are classified into three systems:

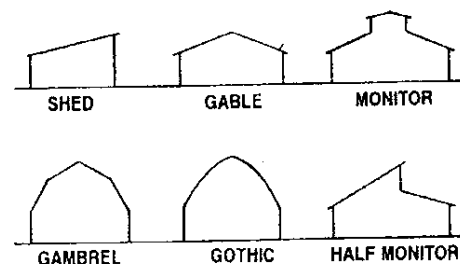
- 1) Free range or extensive system
- 2) Semi-intensive system
- 3) Intensive system
 - a) Deep-litter system
 - b) Cage system

1) Free range system: Adopting this approach only occurs when there is sufficient acreage available to prevent overpopulation and guarantee the necessary stocking density. About 250 mature birds may be raised per acre.

should be extended 1.5 feet beyond the wall on both sides.

7) Doors: If the poultry house is deep lit, the entrance has to be open from the outside. A door that is 6 by 2.5 feet is ideal. A foot bath with a disinfectant built in should be placed at the entrance.

8) Side walls: Ideally, the side wall should reach a height of one to one and a half feet, or around the height of a bird's back. This side wall offers enough airflow in addition to shielding the bird from the elements on wet or chilly days. Cage dwellings do not require side walls.



poultry house may be thatched, tiled, asbestos, or concrete.

10) Overhang: To ensure that rainwater does not enter the shed, the roof overhang must be at least 3.5 feet.

For birds, foraging is their primary food source. Temporary roofing supported by regular poles often provides shelter. The best method for producing organic eggs is this one..

2) Semi-Intensive system: As the name suggests, birds are raised partially on ranges or in homes, meaning that they are allowed access to runs but are also kept inside throughout the night or as needed. Runs consist solely of fields, but residences have substantial floors. For mature birds, the stocking density rate is 750 per hectare on average. There are provisions for watering and food in the pen.

3) Intensive system: Birds are kept entirely inside dwellings, either on the ground or floor, in cages, or on slats made of wire netting. It is the most practical, cost-effective, and efficient approach for large-scale contemporary chicken production.

Deep Litter System

In this approach the birds are kept inside the house all the time. Arrangement for feed, water and nest are constructed within the dwelling. The birds are housed on appropriate litter that ranges in depth from 3 to 5. Typically,

components for litter include sawdust, pulverized nut hulls, chopped paddy straw, chopped sawdust, and wood shavings. Every two weeks, the litter is layered two inches thick on the floor until the desired amount is reached.

Cage System

Under this approach, chickens are grown on wire netting floors in smaller spaces known as cages, either with or without floor-mounted supports. It has shown to be incredibly effective for laying operations, from day one until disposal. Currently, cages are used to house 75% of commercial layers worldwide. With the exception of nipple waterers, which have a

pipeline built through or above cages, feeders and waterers are fastened to cages from the outside. This raising system may also make use of egg collection belts and automatically driven feeding carts. Depending on the type of cage, the droppings are either gathered in trays under the cages, on belts, on the floor, or in a deep pit under the cages.

Types of cages

Based on the number of birds in a cage, it is classified as

- 1) Single or individual bird cage (Only one bird in a cage)
- 2) Multiple bird cage (From 2 to 10 birds, usually 3 or 4 birds per cage)
- 3) Colony cages (Holding birds more than 11 per cage)

Based on the number of rows

- 1) Single-deck
- 2) Double-deck
- 3) Triple-deck
- 4) Four-deck

- 5) Flat-deck

Based on arrangement of cages

- 1) Stair-step cages
 - a) M-type cages
 - b) L-type cages
- 2) Battery cages (Vertical cages)

Based on the type of bird reared

- 1) Brooder / chick cages
- 2) Grower cages
- 3) Layer cages
- 4) Breeder cages
- 5) Broiler cages

