

POULTRY HOUSING

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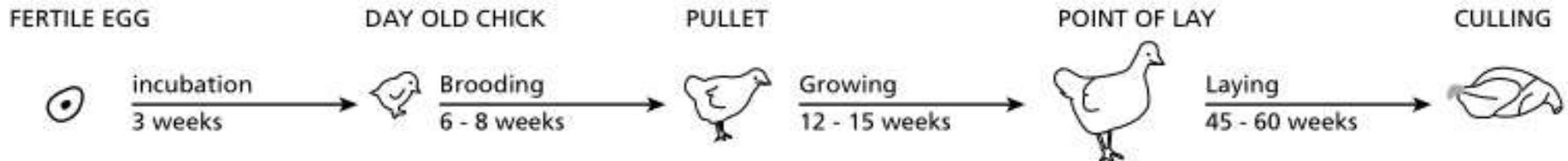
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Introduction

- **Poultry** (which includes chickens, turkeys, ducks and geese) offers one of the best sources of **animal protein**, in the form of both **meat** and **eggs**, at a **cost** most people can **afford**.
- **Chickens** are the most widely **raised** and are suitable even for the **smallholder** who keeps a few birds that largely forage for themselves and require **minimum protection** at **night**.



Typical life cycle of a laying hen

General Housing Requirements

- Proper planning requires knowledge of management and environmental needs during the **various stages** of the chicken's life.
- Laying period may be up to **16 months**
- Normally **culled** after a laying period of **11–12 months**, or number of eggs collected per day is about **65 percent** of the **number of hens** in the flock.
- After a **moult**ing period of a couple of months, the **production is not as high** and the **egg quality is not quite as good as** in the first laying period.

Site selection

- **Well drained**, elevated but fairly level, and has an adequate **supply of drinking-water nearby**.
- Should be selected to provide **adequate ventilation**, but be **protected from strong winds**.
- **Bushes planted** at one **windward corner** and at the **diagonally opposite corner** will induce air currents within the building to **reduce the effect of the heat** from direct solar radiation.
- Poultry housing tend to produce **odors**, they should be located **well downwind** of nearby dwellings.

Site selection

- More than one housing, **separated by 10–15 m** in order to **minimize** the possibility of **spreading disease**.
- **Brooding buildings** should be isolated from other poultry buildings by **30 m** or more, and be **self-contained** in terms of feed supplies and storage of equipment.

Environmental requirements

- Shade
- Good ventilation with natural breezes
- Freedom from roof radiation and the indirect radiation from bare ground
- Only in a few high altitude areas does protection from wind and low temperatures

Temperature and Humidity

- Very low humidity causes **dusty conditions**
- High humidity with temperatures above 27°C, seems to interfere with the physiological cooling mechanism and **increases the possibility of death**
- Day-old chicks require a temperature of **33–35 °C**.
- This temperature is maintained for a week and is then **gradually lowered** to the **ambient temperature** by the end of five weeks.

Lighting

- Additional hours of light can be achieved by installing one **40-watt electric light bulb per 15 m²** of floor space in a position about 2.2 m above floor level.
- Maintenance of the lighting schedule is important, because any **sudden change in the length of the photo-period** is likely to result in a significant **drop in production**.
- **Fourteen hours** of light throughout the laying period is optimum.

Natural Ventilation

- In warm climates near the equator, houses are open for **natural ventilation** and the length of the day is close to **12 hours** throughout the year.
- The result is that pullets start to lay at 14–18 weeks of age and egg size, which is small at first, gradually increases during the first three months.

Other Protection

- Housing should offer protection from **predators and theft**, as well as keeping out rodents and birds.
- Not only do they **carry diseases**, they can also **consume enough feed** to make a significant economic difference.
- **Proper design** and management of the poultry house can effectively contribute to **disease prevention** in the flock.

Construction Details

Wall Construction

- A wall construction consisting of a **solid base**, which protects against **indirect radiation** from the ground, and an **open space** covered with **mesh above it**, is therefore preferred for all four walls in most types of chicken house.
- A **hessian or reed curtain** that can be dropped on the windward side will offer extra protection and protect from direct sunshine.
- An arrangement where the **top end** of the hessian is fixed to the **wall plate** and the **bottom end** is attached to a **gum-pole**, around which it can be **rolled** when not in use, provides for smooth operation.
- The width of the building should **not exceed 9 m** for efficient cross-ventilation.

Lower Wall Design

- Up to **1 m of solid wall** with masonry units.
- Bag-washing will give a **smooth**, easily cleaned finish
- **Adobe blocks** will require the extra protection of **plastering** to prevent the birds from destroying the wall by pecking.

Upper Wall Design

- Total height of the wall, including the solid base, should be about **2 m**
- **18 mm wire mesh** is small enough to keep out rodents and birds.
- A tight-fitting door is essential.

Floor Design

- The floor in a poultry house may consist of **gravel or well-drained soil**
- **Concrete** is desirable because it is easy to **clean**, **durable** and considerably more **rat proof**.

Roof

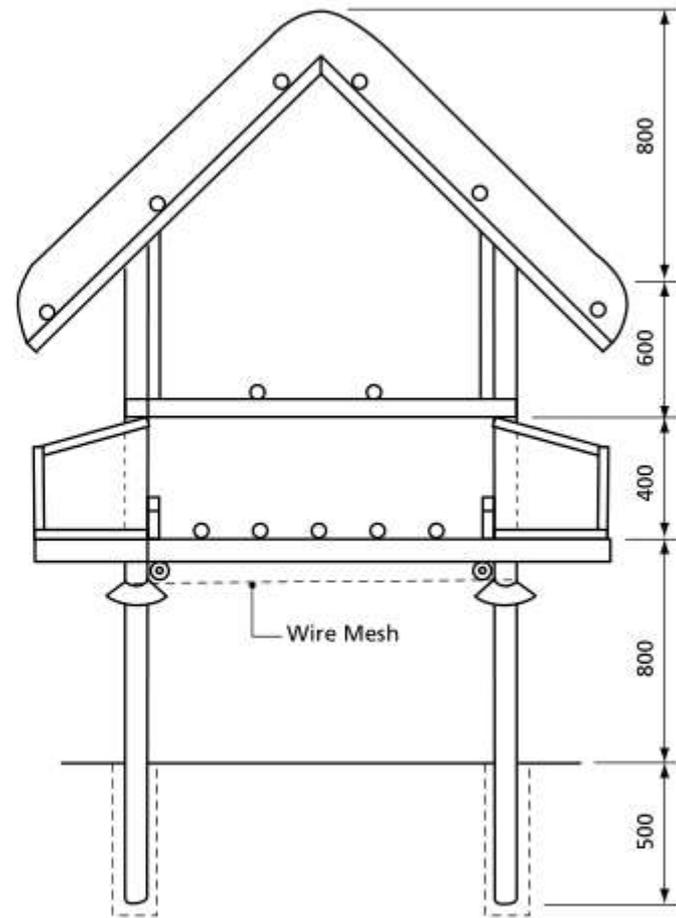
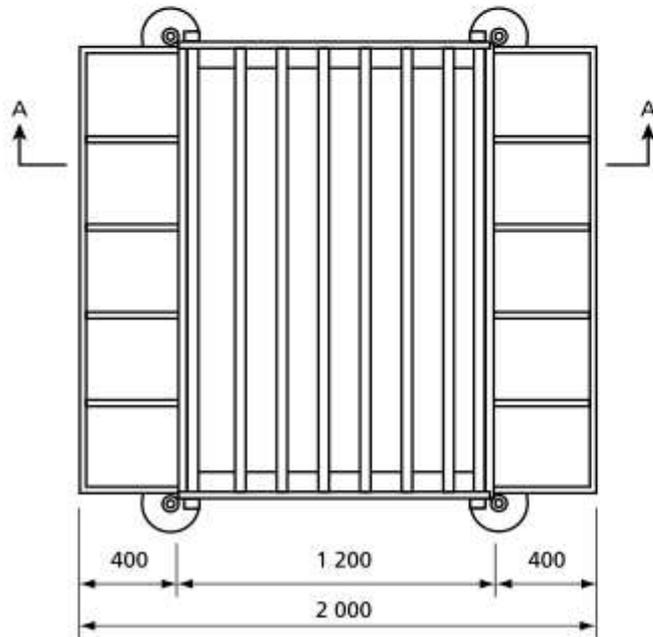
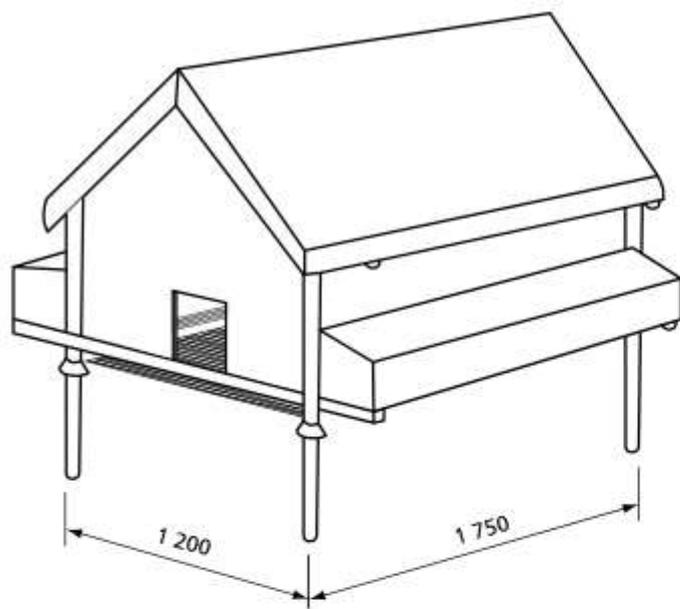
- Roof structures with a **free span** are desirable to avoid any inconvenience from **roof-supporting poles inside** the building.
- **Corrugated steel sheets** are the first choice for roofing material because they are **much easier to keep clean** than thatch.
- **Insulation** under the metal roofing will improve the environment in the house.
- However, a **thatched roof** may result in even better conditions and can be used on **narrow buildings**.

Housing Systems for Layers

- Having considered the factors that affect the **comfort**, **protection**, **efficiency** and **production** of the birds, it is also important to design a system that is **labour-efficient**, reasonable in terms of **investment** and **easy to manage**.
- There are five major systems used in housing for layers:
 - semi-intensive;
 - deep litter;
 - slatted or wire floor;
 - a combination of slatted floor and deep litter;
 - a cage or battery system.

Semi-intensive Systems

- Used by **small-scale producers**
- It is desirable to **provide at least two runs** for alternating use to avoid a build-up of disease and parasites.
- A small, simple house, which allows **0.3–0.4 m² per bird** and has **a thatched roof, a littered earth floor**
- The **shelter** should be large enough for entry to collect eggs and be equipped with nest boxes, feeders, drinkers and perches.
- The legs of structure have **rat guards** and **ant protection**
- **low in cost**

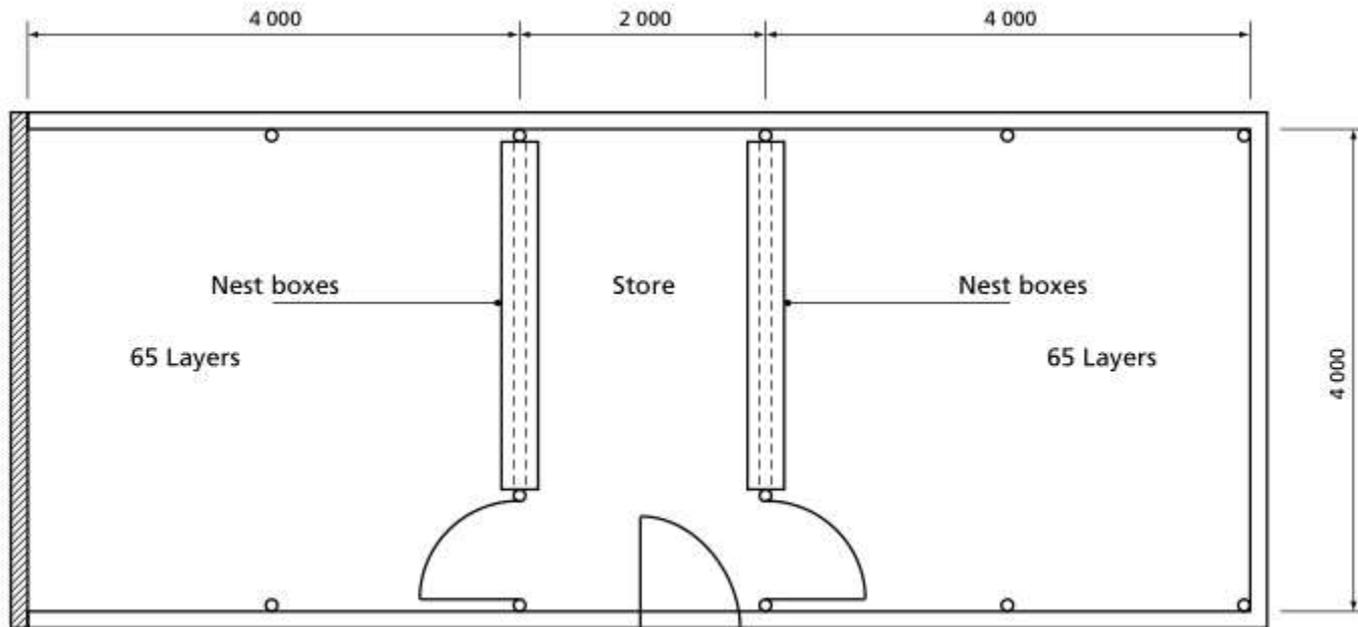
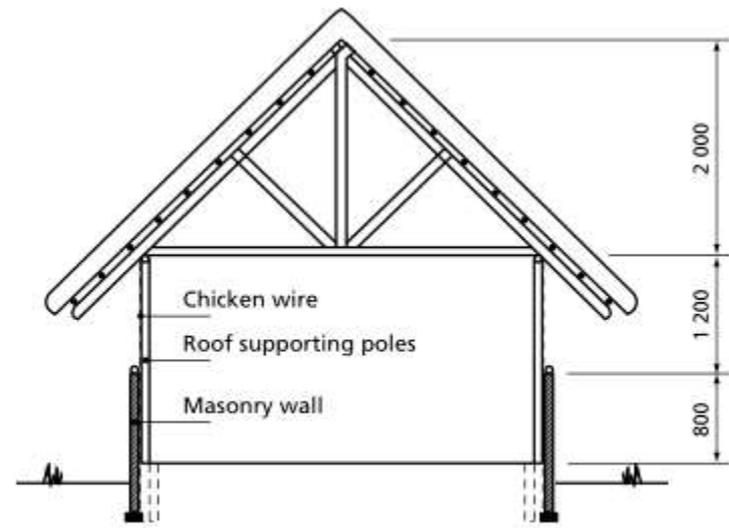
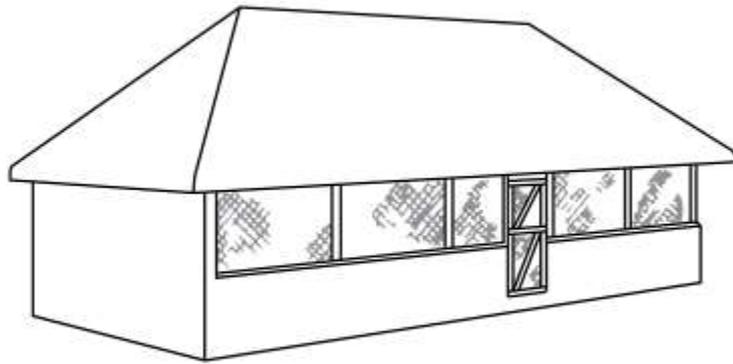


SECTION A - A

Poultry shelter for 50 layers

Deep-litter System

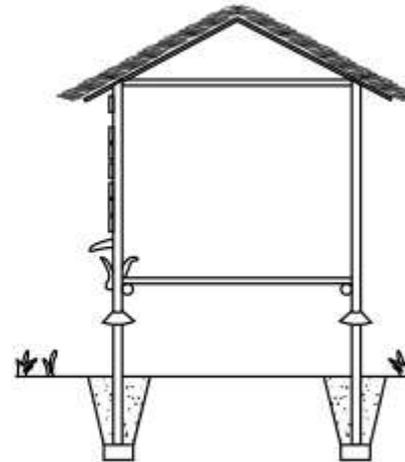
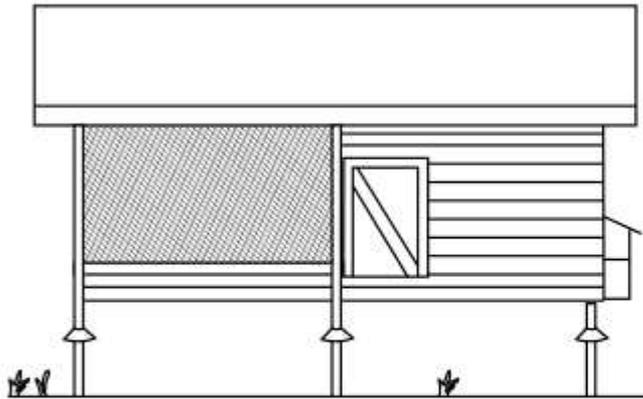
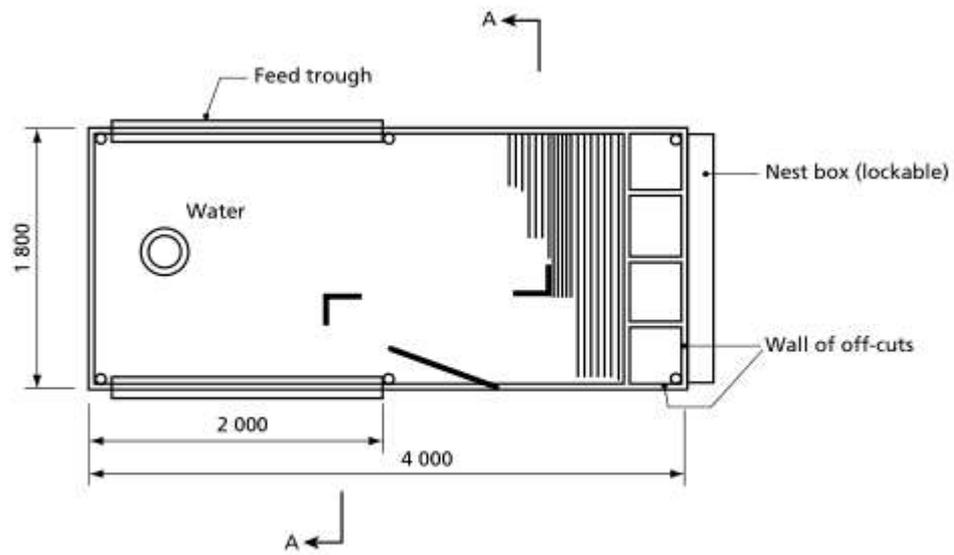
- Confine the birds in a building that offers **good protection** with a reasonable investment
- If well designed, with **low masonry walls** set on a **concrete floor** and **wire mesh** completing the upper part of the walls, the building will keep out rats and birds.
- Principal advantages: easy access for feeding, watering and egg gathering, good protection and reasonable investment
- Principal disadvantage: Need for high quality litter
- Designed up to **9 m in width** and any length that is needed.
- A satisfactory density is approximately **4–5 birds per m² of floor area.**



**Deep-litter house for 130 layers (or 350 broilers)
(the solid wall facing the prevailing wind)**

Slatted or wire-floor system

- It is built on treated wooden piers **0.8–1 m above the ground.**
- Ventilation and manure removal are both facilitated, no litter is required and bird density can be 6–8 per m².
- Feeding, watering and egg-gathering are all efficiently handled **from the outside.**
- If using a slatted floor sufficiently strong for a person to walk on, then a wider building is feasible
- As feeders can be placed completely inside where the chickens have access to both sides of the trough.
- The floor is sectioned for easy removal during cleaning out of manure.

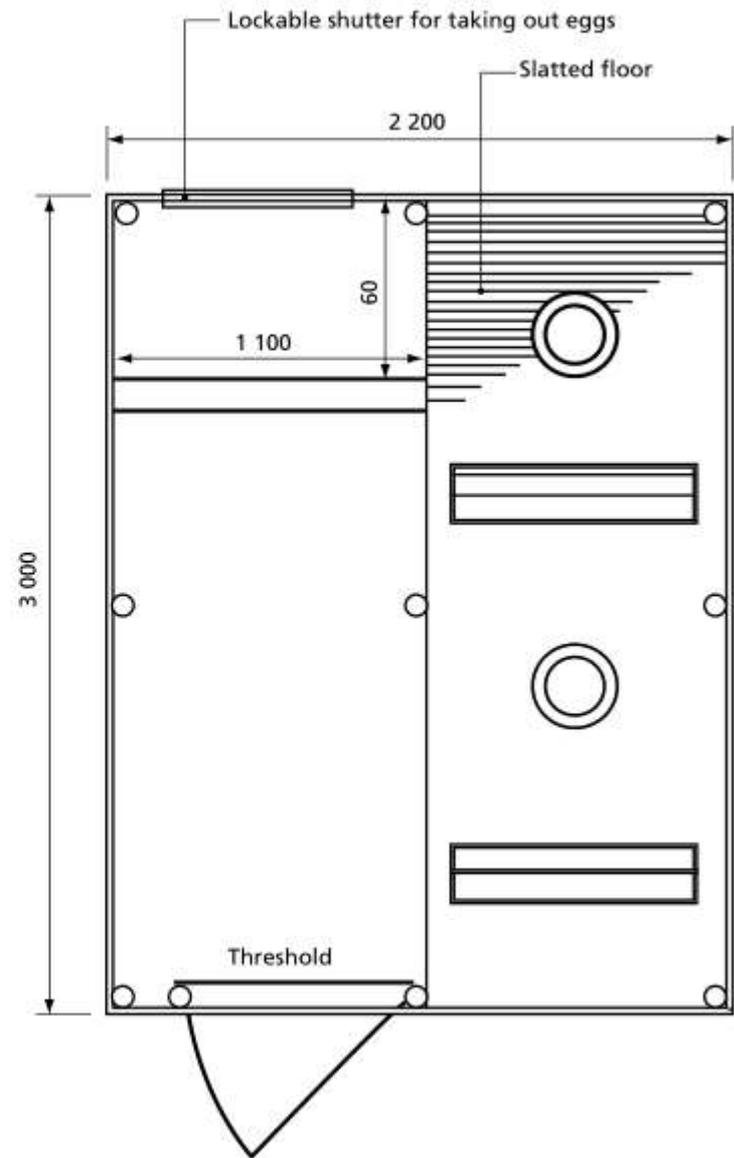
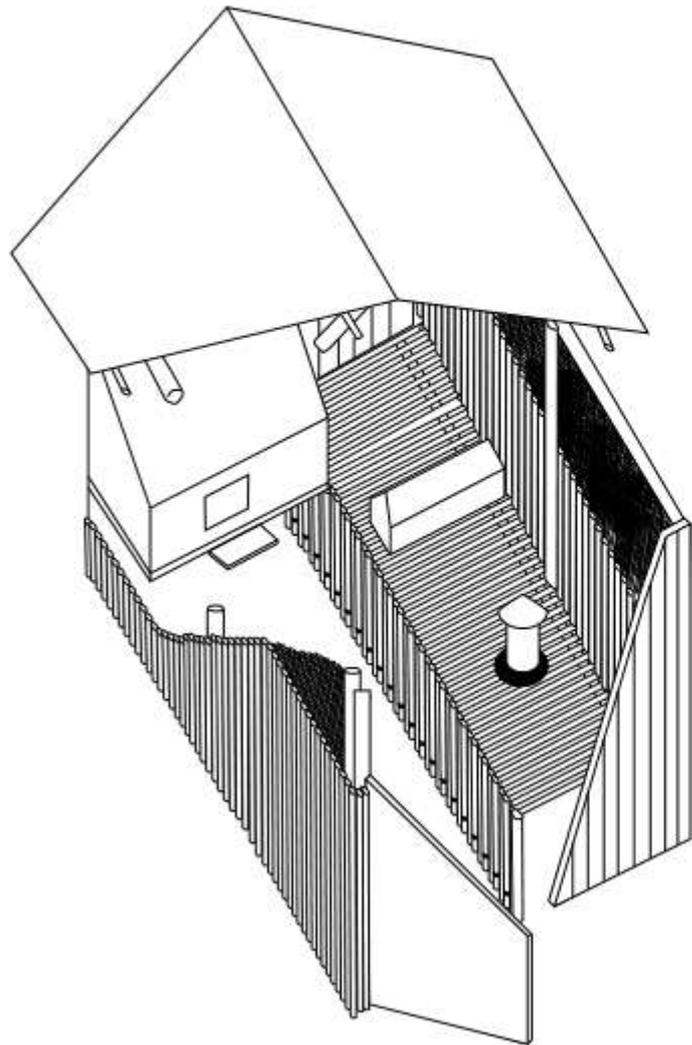


SECTION A - A

Slatted-floor house for 50 layers

Combination of Slatted Floor and Deep Litter

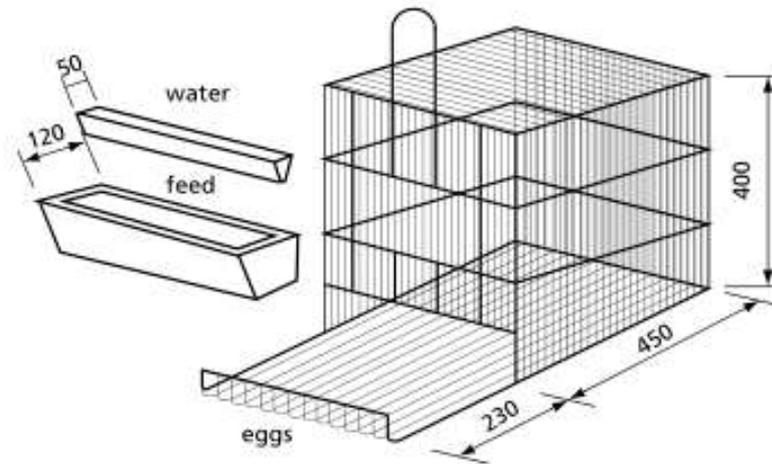
- increase in investment
- This system saves on litter, increases litter life, reduces contact between birds and manure, and allows manure removal without disturbing the hens.
- Ventilation is improved by the slatted floor.
- Biggest disadvantage is the limited width for convenient operation and the need for some litter.



Poultry house for 40 layers, half deep-litter/half slatted-floor

Cage or Battery Systems

- With complete mechanization of feed, water, egg-collection, manure removal and environmental control, two to three people can care for thousands of birds.
- A very large investment is made in order to obtain labour efficiency and ideal environmental conditions.
- Simpler cage systems consist of rows of stair-step cages in long, narrow shelters
- Feeding and egg-collecting are easily done by hand, while watering may be either by hand or with an automatic system.



Cage compartment and various arrangements of cage tiers in open-side houses

Housing for breeders

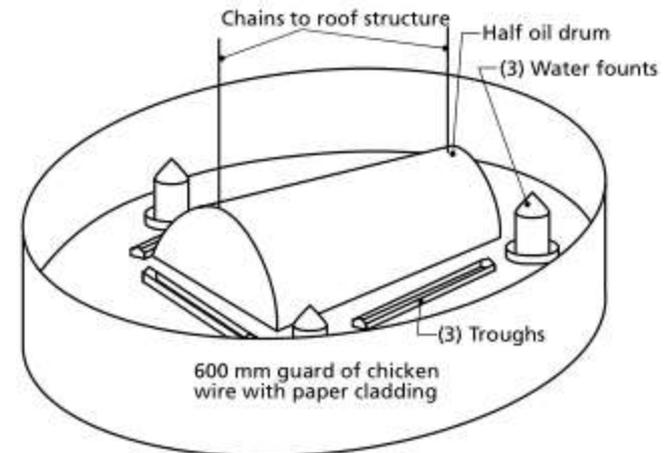
- Breeders must be housed in one of the floor systems because cocks need to run with the hens.
- One cock per 5–10 hens is sufficient.
- Special emphasis is placed on disease control, so often a partially or completely slatted floor design is preferred.

Brooders

- Naturally hatched chicks are reared and protected by the **broody hen** and can be left undisturbed, provided that their yard is protected from predators, is of a good sanitary standard and has a supply of feed and water.
- Artificially incubated chicks must be started under **gas-fired or oil-fired brooders** to compensate for the absence of a natural mother, and to keep them warm without crowding together.
- If electricity is available, a **250-watt infrared lamp** is a more reliable and comfortable solution, but it is also more **expensive**.

Brooding Arrangement (for approximately 100 chicks)

- The hover, which prevents the heat from escaping and protects the chicks from draughts, is made from a halved oil drum and is equipped underneath with two heaters, e.g. kerosene storm lanterns protected by netting.
- The hover is suspended by chains from the roof structure, and its height over the floor is adjusted to achieve the required temperature



Equipment and Stores

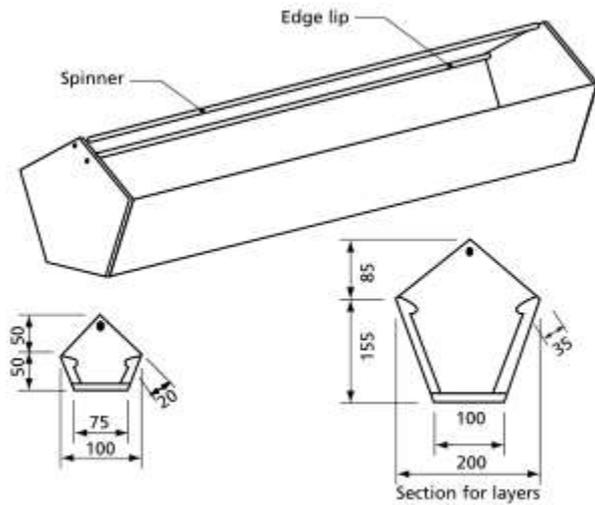


Figure 10.49a Trough

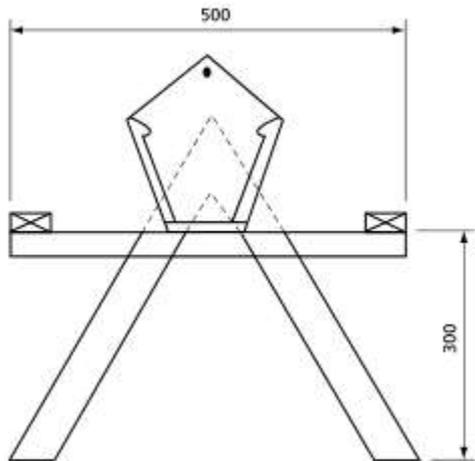


Figure 10.49b Trough on a stand

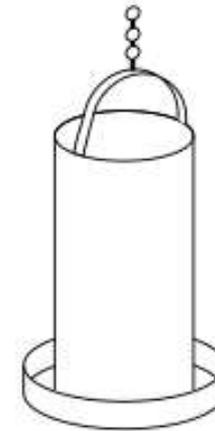


Figure 10.49c Tube feeder

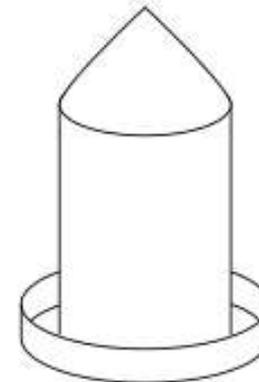
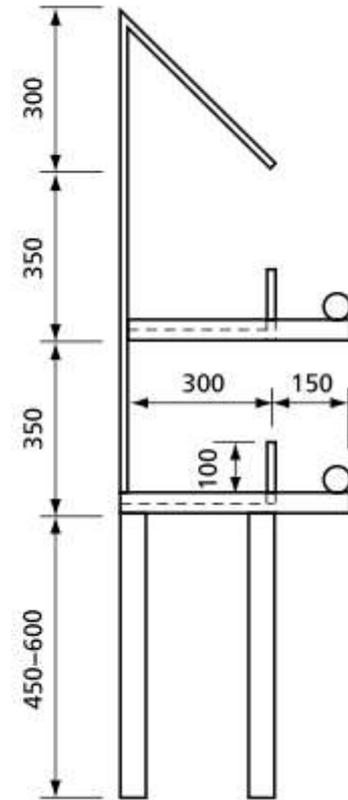
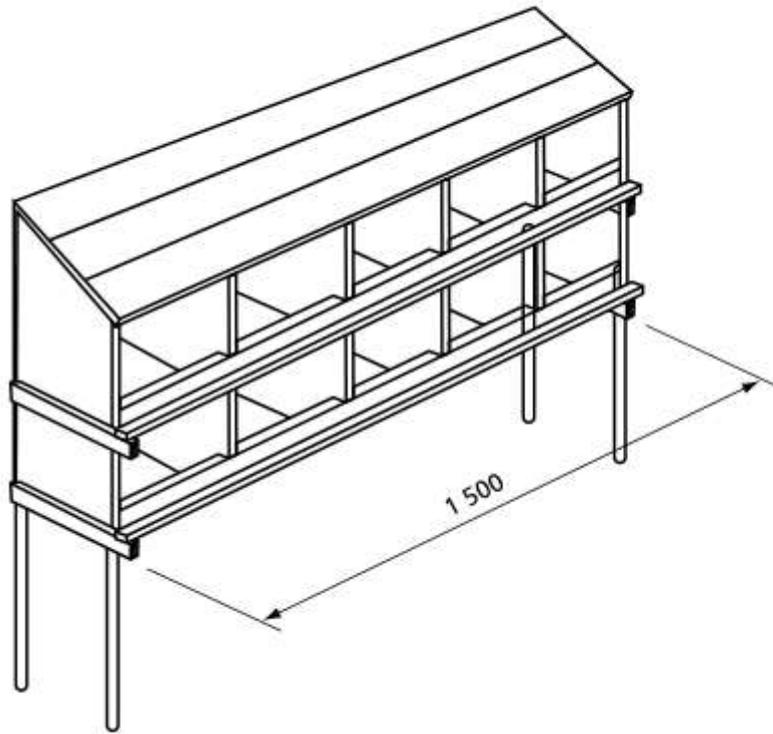
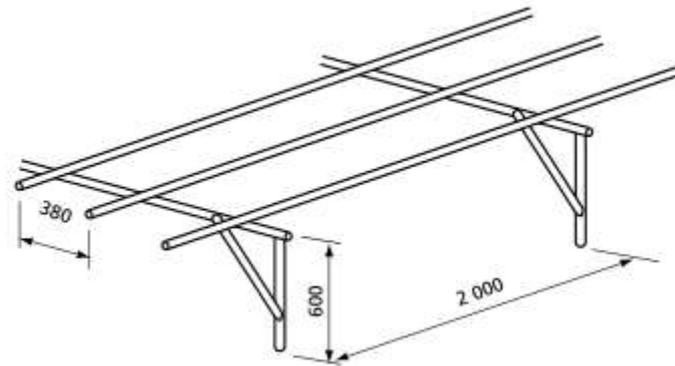


Figure 10.49d Water fountain

Feeders and waterer



A battery of single laying nests for 50-60 hens



Perches

Egg handling

- Eggs are an excellent source of animal protein and are usually less expensive than meat.
- Eggs are perishable and possible carriers of salmonella, a serious food poison, so the need for clean conditions and refrigeration cannot be overemphasized.
- Several recommended practices and facilities:
 - A clean nest and floor litter will minimize the number of dirty eggs.
 - The egg-handling and storage building should be screened, free of rodents and other vermin.
 - The water supply should be potable and ample.
 - Lavatory and toilet facilities should be available.

Reference

- Rural Structures by FAO

Thank You 😊