

# POULTRY HOUSING

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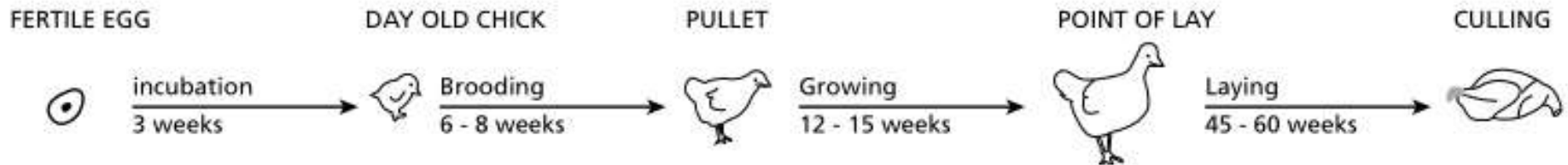
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# Introduction

- **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 m<sup>2</sup>** 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**.

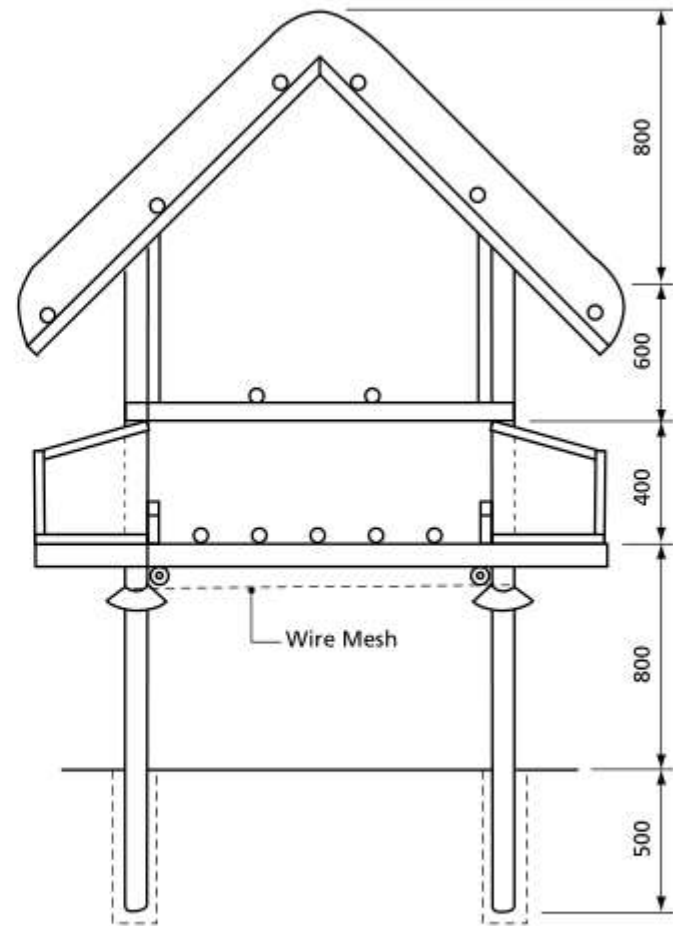
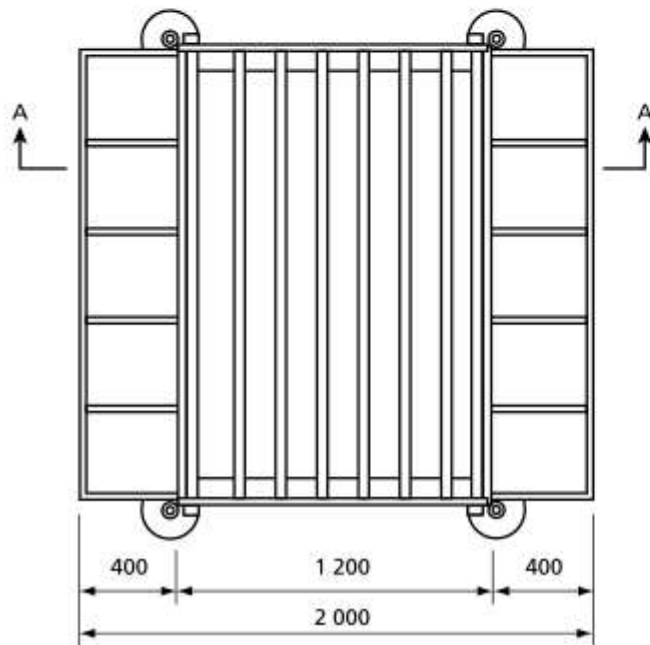
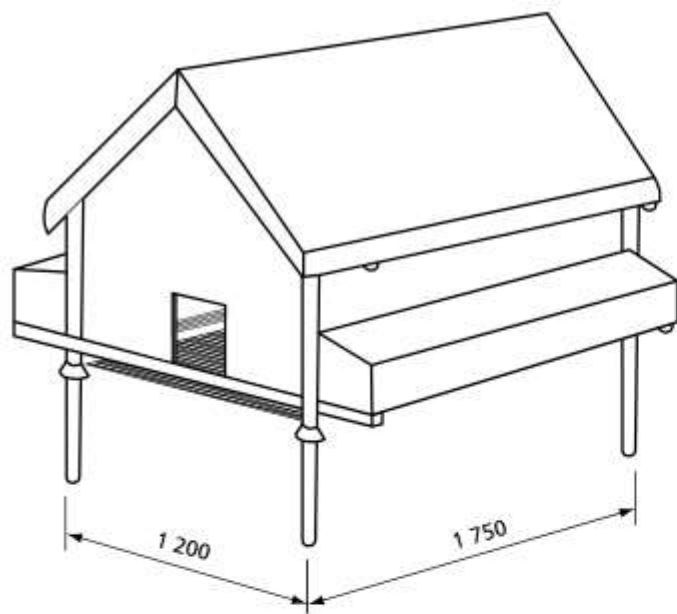


# Housing Systems for Layers

- 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 m<sup>2</sup> 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**

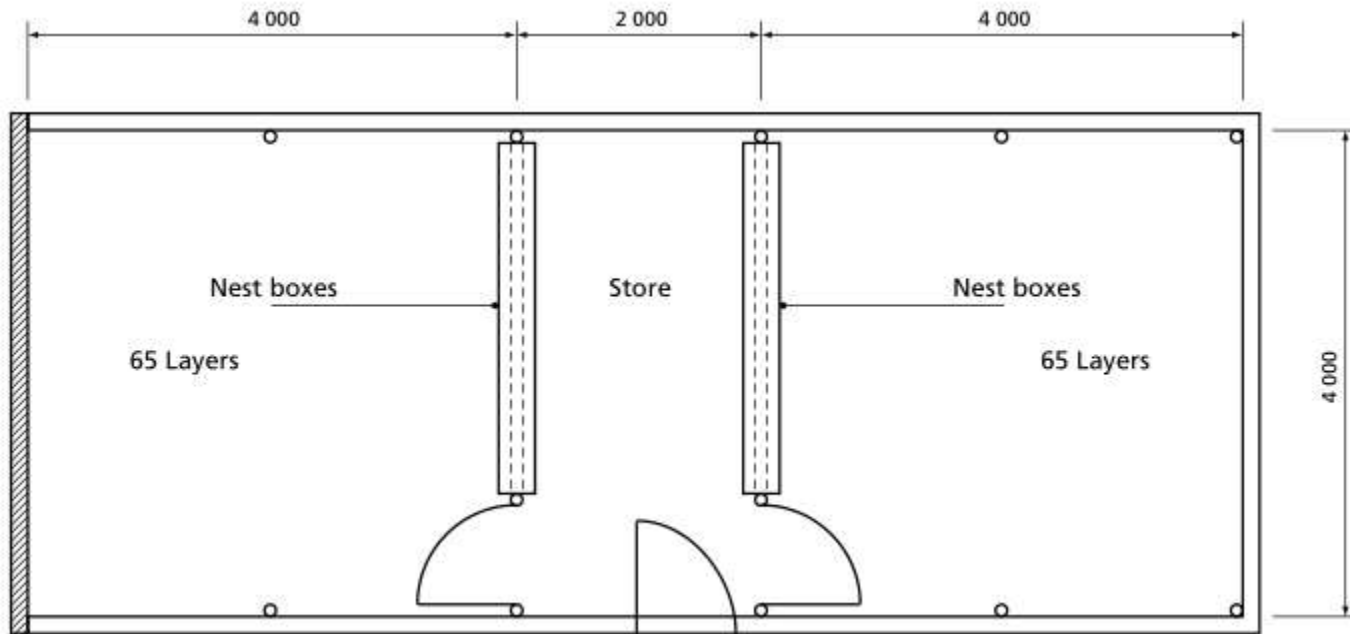
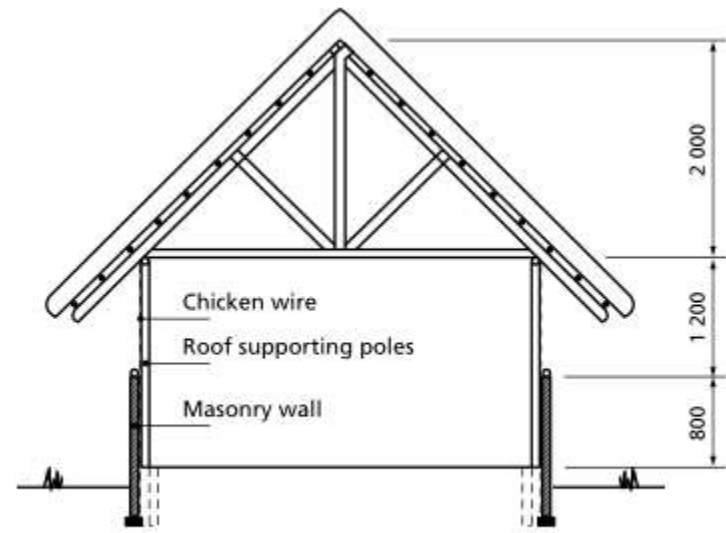
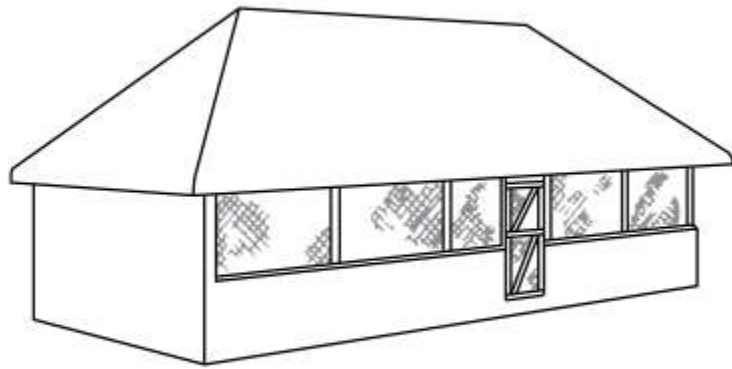


SECTION A - A

**Poultry shelter for 50 layers**

# Deep-litter System

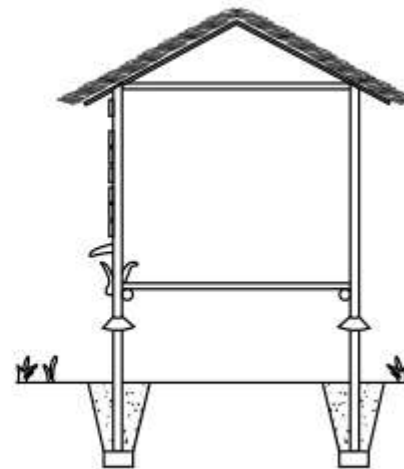
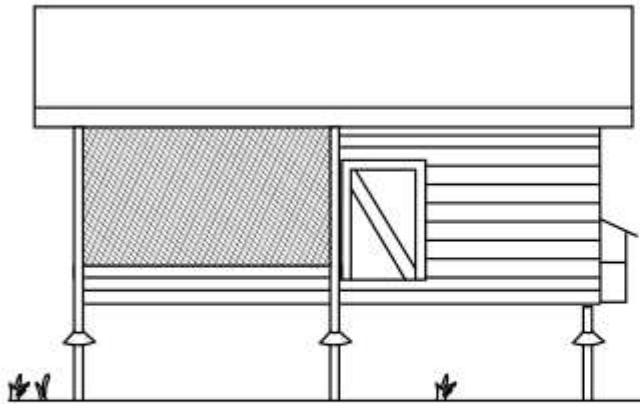
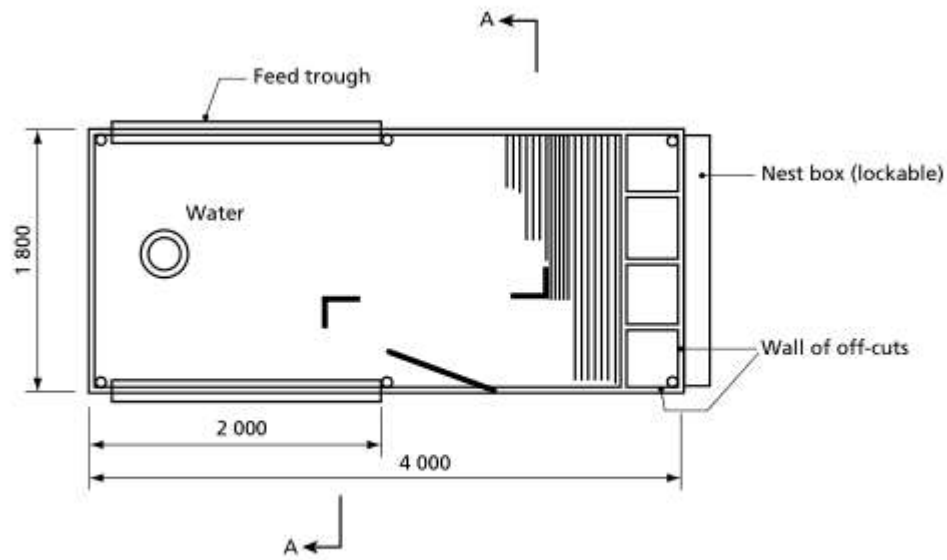
- Confine the birds in a building that offers **good protection** with a reasonable investment
- If well designed, with **low masonry walls** set on a **concrete floor** and **wire mesh** completing the upper part of the walls, the building will keep out rats and birds.
- Principal advantages: easy access 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 m<sup>2</sup> 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 m<sup>2</sup>.
- 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.



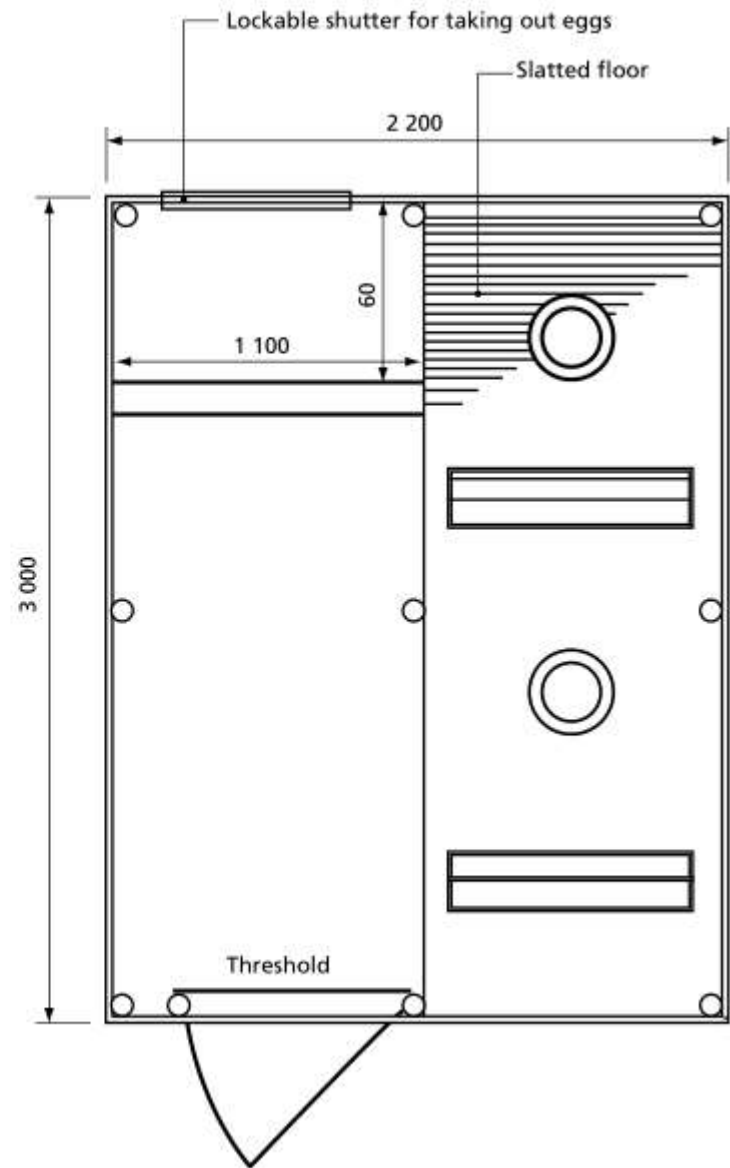
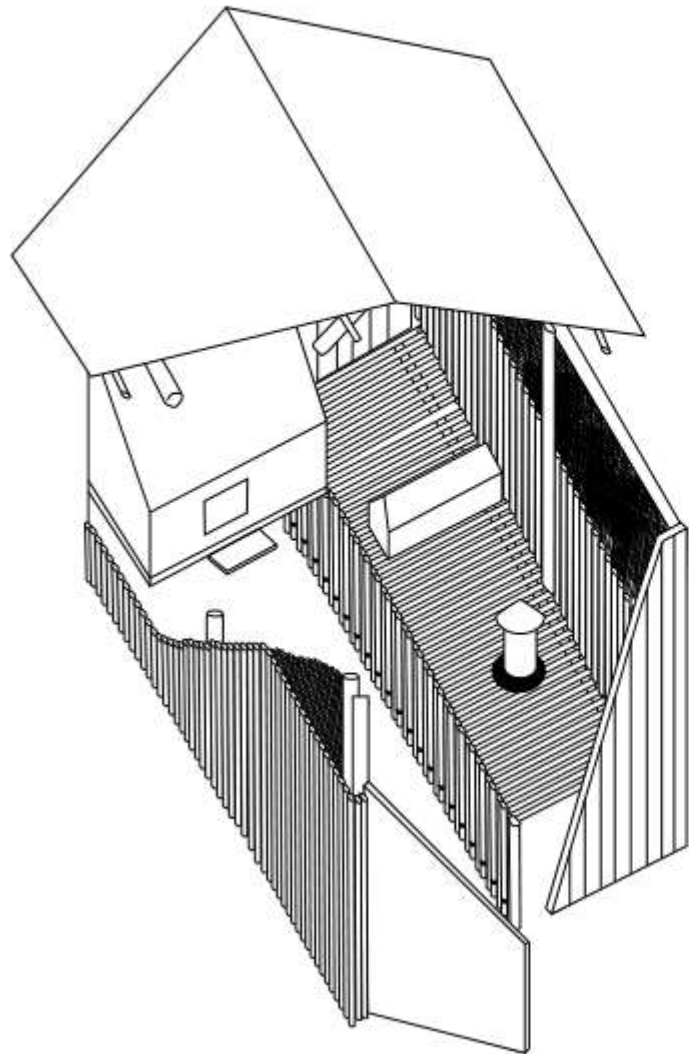
SECTION A - A

**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.

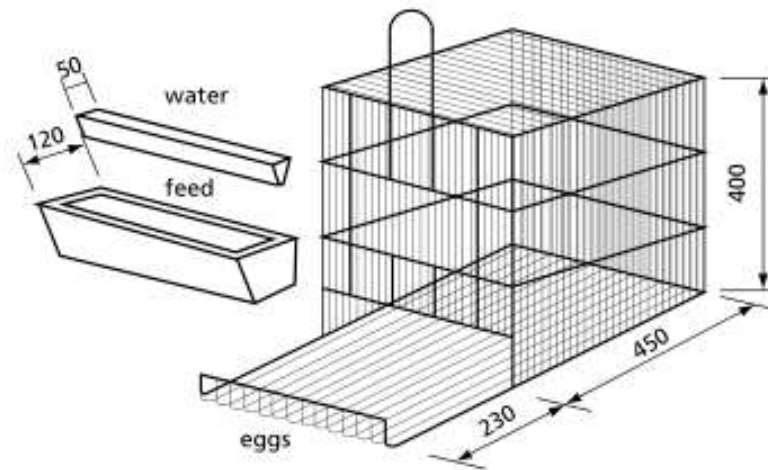




**Poultry house for 40 layers, half deep-litter/half slatted-floor**

# 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

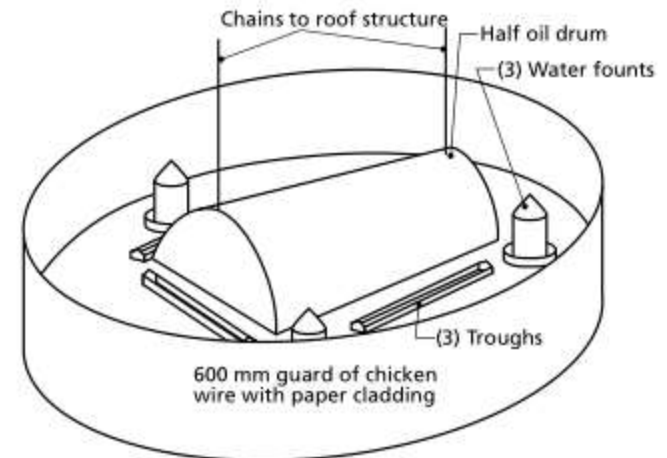
- Breeders must be housed in one of the floor systems because cocks need to run with the hens.
- One cock per 5–10 hens is sufficient.
- Special emphasis is placed on disease control, so often a partially or completely slatted floor design is preferred.

# 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

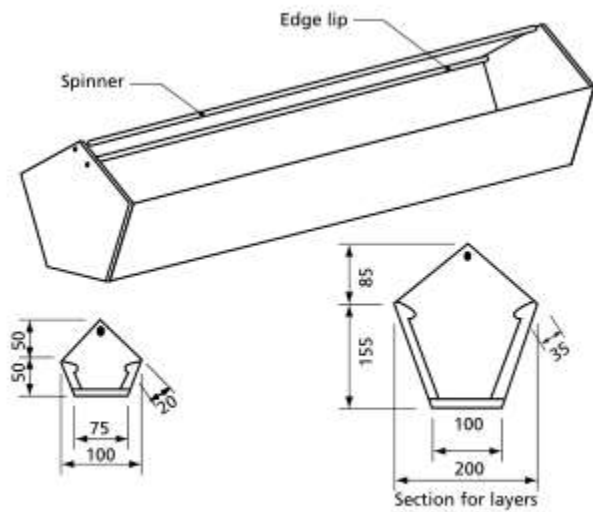


Figure 10.49a Trough

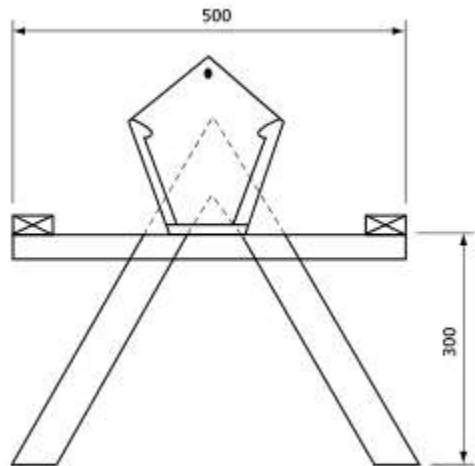


Figure 10.49b Trough on a stand

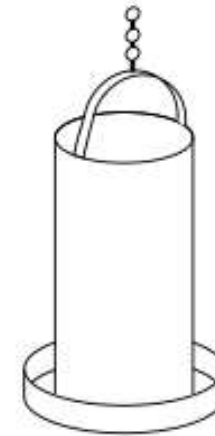


Figure 10.49c Tube feeder

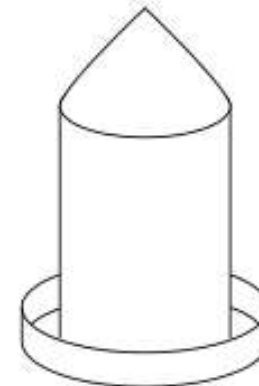
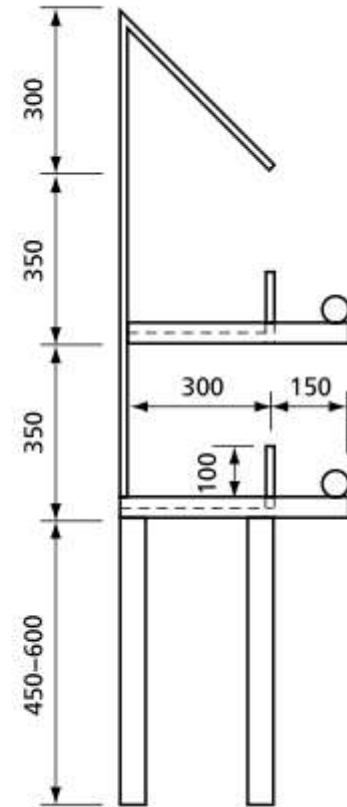
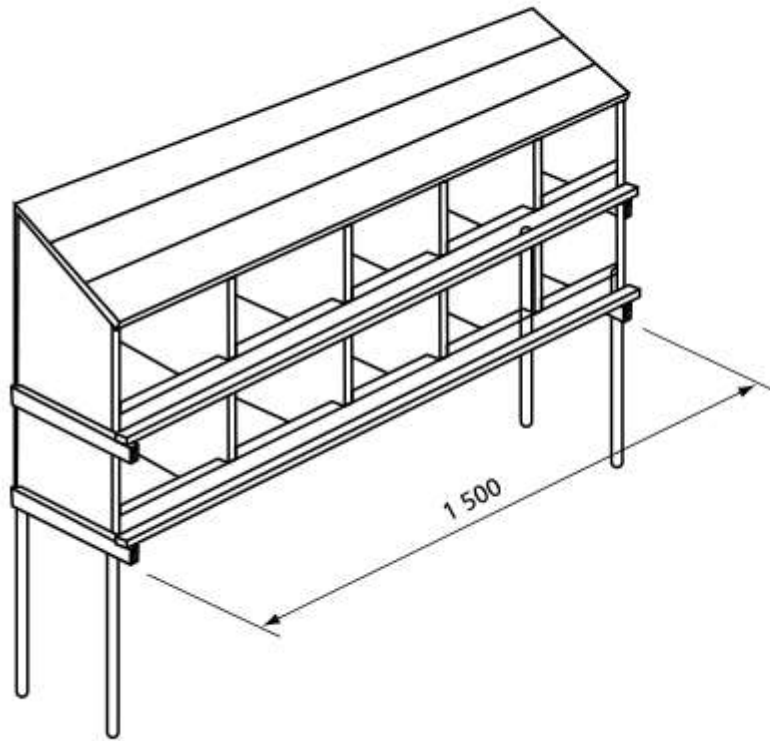


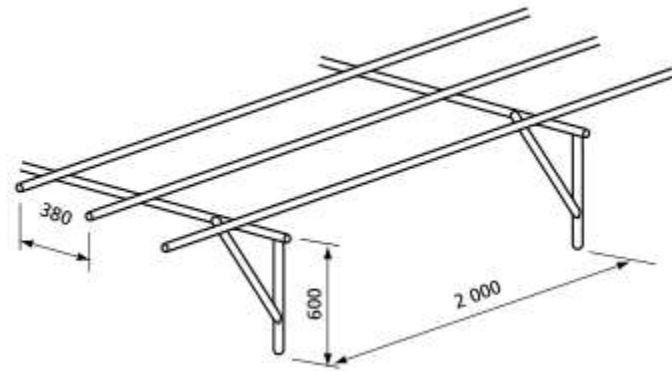
Figure 10.49d Water fountain

## 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 😊**