

HOUSING SYSTEM OF CATTLE



HOUSING OF CATTLE

Introduction :-

- We are study about the following topic in cattle housing:-
-
- • Requirement of housing
-
- • Type Of housing
-
- • Advantage and disadvantage of animal housing
- • Dimension of loose house
- (Space requirement in loose house)
-

- **Main building unit**
- • **Accessory building unit**
-
- • **site selection for new farm building constructions**
- • **Arrangements of farm buildings**
-
- • **constructions detail of different structure of farm building**
-
- • **Dimension of passage and gate**
-

Requirement of housing

- *(1) For preventing animal from harsh wether climate*
- *(2) To prevent animal from predators*
- *(3) To prevent from different geographical and climatic variations*
- *(4) For better production performance of animal*
- *(5) For better managment of animals*

Type of housing

TYPES OF ANIMAL HOUSING

- 1- Conventional Barns
- 2- Loose Housing
- 3- Free Ranges

CONVENTIONAL BARNES

- ❖ Also called as stanchion barn.
- ❖ cows are confined together on a platform and kept tight by a stanchion or neck chain.
- ❖ The swine are not kept confined in a barn, rather they are let free.
- ❖ animals and men caring for animals for animals are less exposed to adverse weather conditions.
- ❖ Barns remain hygiene and disease prevalence is less.
- ❖ Conventional barns are recommended in temperate Himalayan regions.



Conventional barn

- *If the number of cows is 12-16 than single row is prefreble in conventional housing.*
-
-
- *•If the cows number are greater than*
- *10-20 or not more than 80-100. In this condition double row is prefreble in convential housing.*
-
-

Advantage of tail to tail system

- *(1) 15 % time spent in front of cow and 60 percent time spent on the back side.*
-
- *(2) cows can get more fresh air from out side.*
-
- *(3) The head in charge can inspect greater number of milking man during milking.*
-
- *(4) Any change in hind qwarter detected qwickley.*



Advantage of face to face system

- *(1)cows make a better showing for visitors*
- *When heads are together.*
-
- *(2)The cows feel easier get in to their stall.*
-
- *(3) feeding of cows is easier in common manger.*
-
- *(4) it is better for narrow barns.*
-



Parameters	Tail to tail system	Head to head system
Distribution of feed	Difficult	Easy
Cleaning of gutar	Easier	Difficult
Construction cost	More	Less
Space reqirement	More	Less
Entry of low inside the shed	Difficult	Easy
Fresh air inside	More	Less
Danger of spread of disease	Less	More

LOOSE HOUSING

- Keeping animals close in an open paddock or pasture throughout day and night except at milking time.
- The open paddock is provided with shelter along one side.
- A common watering tank is provided and fodder is fed in common mangers.
- Concentrates are fed at the time of milking, which is done in separate milking barn.
- Self feeding is practiced in loose system of housing.

- The open paddock is enclosed by means of half walls or plain wire fences of convenient height.
- All types of livestock can be housed and managed under loose housing.
- The housing system is suitable in all parts of the country except in temperate Himalayan region and heavy rainfall areas.
- However, slight modification of extra fittings may be necessary.
- The loose houses are cheaper to construct, easier to expand and flexible in utility.
- Feeding and management of stock is easier because of common feeding and watering management.

- Animals feel comfortable.
- About 10 to 15% more stock can be accommodated in loss housing for short duration of time.



Loose housing of cattle and buffalo

FREE RANGES

- Otherwise called as ranches indicate a type of management.
- Leaving stock free in a large estimate.
- The area is natural or cultivated pasture land with watering points and shelters.
- This housing is suitable for the animals that are not handled daily like beef cattle or sheep.
- There is a scope of rearing of sheep on ranch conditions in north western and hilly regions of the country



Beef cattle reared on ranch system

Advantage and disadvantage of animal housing

- *Advantage of conventional housing*
-
- *1 Individual attention can be given to each animal.*
- *2 The animals are less exposed for harsh weather climate.*
- *3 Animal can be kept clean and spreading of disease can be controlled better in barn.*
-
- *4 suitable for temperate himalya region*
- *5 Animal can be placed well before reaching the inspection officer.*
-

- Disadvantage of conventional housing:-
-
- (1) Cost of construction is more.
- (2) it is not a flexible and not expended
- (3) more no of labour is required.
- (4) clean milk production is not possible.
- (5) It is difficult to measure heat condition.
- (6) Animal can not get more exercise.

- ***Advantage of loose housing***
- ***(1) Cost of construction is low then conventional housing.***
- ***(2) All types of animal are live in loose house.***
- ***(3) It is flexible and expendable.***
- ***(4) feeding and watering is easier.***
- ***(5) Animals are more comfortable and they can freely move and can get optimum daily exercise.***
- ***(6) Less labour requirement and more labour efficiency.***
- ***(7) clean milking is possible because separate milk parlour is present.***
- ***(8) facilitated of easy detection of heat.***

- ***Disadvantage of loose housing:-***
- ***(1) It have spread of disease can not be controlled.***
- ***(2) It is difficult to protect to animal from harsh weather condition.***
- ***(3) It is difficult to placed the animal in a row before reaching the inspection officer.***
- ***(4) Timed cow are not protracted in loose housing.***

(4) Dimension of loose house

Space requirement

- | Type of animal | Covered area | Open area | Max. No. Of animal per paddock | Height of shed and ewes |
|---------------------------|--------------------|-------------------|--------------------------------|-------------------------|
| Cow | 3.5 m ² | 7m ² | Below 25 | 175-220cm |
| Buffalo | 4m ² | 8m ² | 25-30 | 175-220cm |
| Bull | 12m ² | 120m ² | 1 | |
| Young calf (below 8 week) | 1m ² | 2m ² | Less than 5 | 175-220cm |
| Old calf | 2m ² | 4m ² | Below 15 | 175-220cm |
| Heifer | 2m ² | 4-5m ² | Below 25 | 175-220cm |
| Down calves | 12m ² | 12m ² | 1 | 175-220cm |

175 in medium and heavy rainfall area
220 in dry area.

The feeding and watering space:-

Type	Space per animal	Total manger length per 100	Total water length per 100	Width Depth Height
Adult cattle and buffalo	60-75cm	6000-7500cm	600-750cm	60cm 40cm 50cm
Calf	40-50cm	4000-5000cm	400-500cm	40cm 15 cm 20 cm

Main building unit

- ✓ *Milking barn or parlour*
- ✓ *Dawn calver shed or calving pen*
- ✓ *Calf pen*
- ✓ *Young stock or heifer shed*
- ✓ *Dry animal shed*
- ✓ *Bull shed*
- ✓ *Dairy cow shed*
- ✓ *Isolation shed*
- ✓ *Qwarantine shed*

Milking barn or parlour

- *This is a barn where mulch animal are milked and fully covered.*
-
- *It is located at the center of farm with other buildings.*
-
- *There shall be an individual in the milking barn and number of standings required should be 25% of total number of milch animal in herd.*
- *The milking operation should be carried out in batches*
-
-



Milking barn or parlour

Dimension of milking barn

- *Length of standing space -1.5-1.7m*
-
- *Width of standing space ---1.05-1.2m*
-
- *Width of central passage --1.5-1.8 m*
-
- *Width of feed alley -----.75m*
- *Width of gutter -----. 30m*
-

Dawn calver shed or calving pen

- Pregnant animals are transferred in calving pen 2 to 3 weeks before the expected date of calving.
- • Calving pen 3m×4m(12m²) is essential to keep the animal at the stage of pregnancy.
- • It should be located nearer to the farmers quarter for better supervision.
- • The number of calving pens required is 10% of the total number of breedable female stock in the farm.
- Proper ventilation and lighting is require.
- • open area boundary wall height =1.25m
- • slope = 1 In 40 toward drainage.
-

calf pen

- *This is meant for housing young calves separately.*
- *•it can be loacated either at the end or on the side of milking barn.*
- *•This facility taking calves to their dams quickly.*
- *• if there are large number of calves' the seprate unit of calf shed sould be arranged and loacated nearer to milking barn.*



Calf shed or pen

Calf shed dimension

Age of calf	Covered area	Open area
0-3 months	1m ²	1.5 m ²
3-6 months	1m ²	2.5m ²
6-12 months	2m ²	4m ²

Calf shed slope = 1:40 to 1:60

Young stock or heifer shed

- *It is housing for young heifer separately.*
- • *older heifer calves from about six month of age to breeding age are to be housed separately from the suckling calves.*
- • *when a large number of young stock then they should be divided in to different age group and each group housed separately.*

Dry animal shed

- *In the large house, milch and dry cows are housed separately.*
- • *The floor in the covered area should preferably be made of cement concrete.*
- • *under indian conditions, in smaller farms, milch and dry animal housed can be together.*
- • *normally, one third of the animal in a farm will be in dry or in dry cum pregnant stage.*

Bull shed

- *It is meant for housing of bulls separately in farms.*
- • *It should be constructed at the end of the farm.*
- • *There shall be one shed for each bull.*
- • *The number of bulls required being one for every 50 breedable females in the farm, if natural breeding practiced.*
- • *when artificial insemination facility is available then no necessary keep the bull in the farm.*
- • *The bull shed covered 3×4 m dimension and a paddock of 120 square meter.*
- • *slope -1:40*



Bull shed

Dairy cow shed have following parts

- *Feeding passage*
- • *manger*
- • *waterer*
- • *standing space*
- • *guttar or Drainage*
- • *milking passage*

In conventional barn dimension of dairy cow shed :-

- *Width of standing space-----1.5 to 1.7 m*
- *Length of standing space-----1.7 to 2.2 m*
- *Width of central passage- -----1.5 to 1.8 m*
- *Width of feed alley-. -----. 75 -1 m*
- *Width of gutter -----20-30 cm*
- *(U shape) and depth of gutter- 8-10 cm*
- *Slope- ----- 1:40*

Isolation shed

- *It is the separation of sick animals from healthy animal to avoid disease transmission to healthy stock.*
- *It should be located at the corner of the shed.*

Quarantine shed

- *It should be located at the entrance of the farm.*
- *The newly purchased animals entering in to the farm should be kept in qwarantine shed for a. Minimum period of 30 to 40 days to watch out of any disease occurance.*

(7) Accessory buildings :-

Accessory buildings

- Store room
- Milk room
- Hay or straw shed

Store room

- *All the four walls should be closed and it should be rat proof.*
- • *At little distance from animal shed and. 2m³ space per adult animal.*
-
- • *There should be one concentrate store room with feed mixing unit at a distant place and a smaller feed store room behind the milking parlour.*

Milk room

- *It is essential to keep the milk and also chill the milk in larger dairies having 400 to 700 liters production capacity that requires 3.7×5 size of room and an additional 0.37m² for every 40 litres of milk production.*
- *•for a smaller dairy unit below 100 liters a small room with a dimension of 3.75cm×3cm can be sufficient for storing milk and concentrate feed.*

Hay or straw shed

- *An adult animal consume about to 5 to 6 kg of hay or straw per day,while young stock consumed about 1-3 kg of hay or straw per day.*
-
- *The annual requirement can be calculated and the space requirement can be arrived.*

Site selection for new farm building construction

- *Topography*
-
- • *land requirement*
-
- • *electricity availability*
-
- • *water availability*
-
- • *protection from humid and solar radiation*
-
- • *away from noise and other pollution*
-

- *Availability of market facilities*
-
- • *Transportation facilities*
-
- • *Drainage facility*
-
- • *Telephone line facility*
-
- • *school near farm*
-
- • *post office Availability*
-
- • *shopping center should be near*

Arrangements of farm building

- *Arrangement is essential for increase the profit, decrease*

-

- *the production cost and increase the efficiency of farm.*

- *farm buildings divide into different catagory*

- *Farm house or home stead*

- *Farm building or farm stead*

- *Farm store*

- *Qwarantine shed*

- *Isolation shed*

Factor to be considered during designing of farm building

✓ *Designing for flexibility*

✓ *Width of building*

✓ *Length of building*

Width of building -
Single row - 3•8-4•25m

Double row- 7•9-8•7 m

✓ *Height of building*

✓ *Shape of the roof*

✓ *Structural form*

✓ *Designing for unit*

✓ *Orientation of shed*

Designing the building for the production and product control

- *Enviromental controlled house*

Qwality of product

Labour control

Disease control

Preparation of housing plan

- *It should be attractive.*
- • *It should minimise labour cost.*
- • *It should have resale value.*
- • *shed orientation will be better to protect the animal from harsh climate.*
- • *plantation for wind break -25 to 45 m distance from farm. 3-7 rows and distance bitwen row is 6-10 m.*

Construction details of different structures of farm building

- *General definitions -:*
- • *Eaves :- lower edge of roof which is resting on supporting wall.*
- • *Gable :-The triangular upper part of wall form at the end of the roof.*
- • *Rafters :- These are pieces of timber which extend from eaves to ridge.*
- • *Span:- The horizontal space between internal faces of wall.*

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- Ridge :- The Highest part of building is ridge where two slope of roof joints.
- • Rise :- The vertical height bitween the eaves to the ridge.
- • pitch :- It is the degree of slope with horizontal of roof and it is should not exceeds 45 degree.
- Thatch roof - 35 degree
- Tiled roof -30-35 degree
- Sheet roof -12-18 degree

Roof

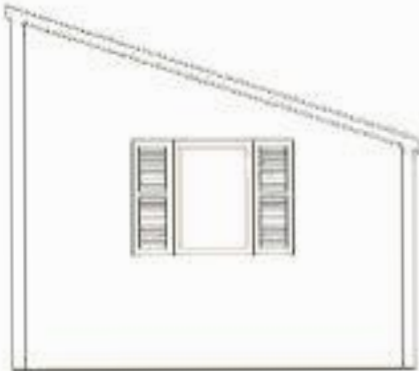
- It should be light, strong, durable and bad conductor of heat.
- • free from the tendency to conduct moisture inside.
- Two type roof :-
- (1) flat roof :- present in low rainfall and dry area.
- (2) sloppy roof :-present in high rain fall area.

Pattern of slopy roof

- *(1) lean to type roof :-These are simple roof with single slope.*
- *•In this roof ventilation is absent.*
- *•In this type of roof one wall is higher then other and give maximum span of 2-4 m.*
-
- *(2) Gable roof :-*
- *• these are coupled roof with two slope.*
- *•Roof ventilation is present.*

- ***(3) Monitor roof -This roof have two slope but one overlaps other at the ridge of the roof.***
- ***• Roof ventilation is present between two slope.ventilation gap is one feet.***
- ***• This also suitable for tropical buildings and serve the purpose of ventilation and lightning.***
- ***(4) semi- monitor roof- This roof have two slope present.***
- ***Roof ventilation is present and ventilation gap is one feet.***
- ***(5) couple close roof- span 4-6 m***
- ***(6) collan beam roof - span 4-6 m***
- ***(7)king post truss roof -span is more than 6m***

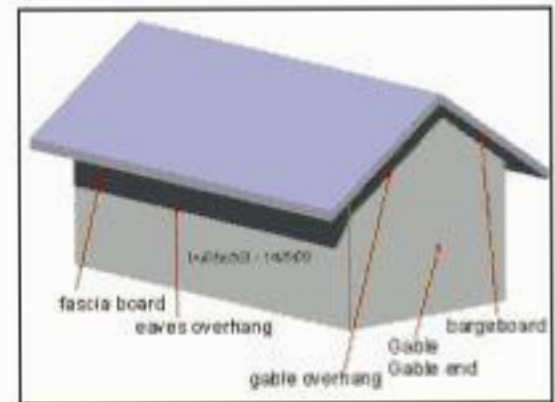
Shed Type



Two-thirds span roof



**Gable roof/double-pitch
/equal-span roof**



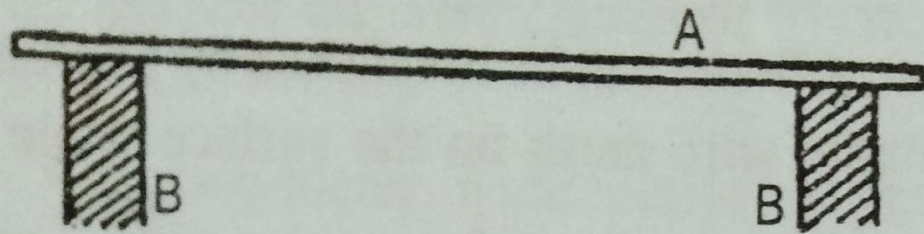


FIG. 8.7: Single Slope Roof

A. Asbestos sheet; B. Supporting pillars

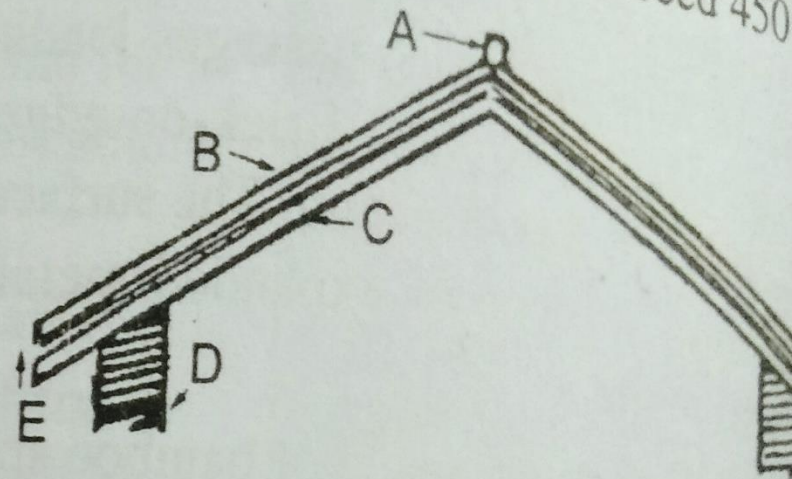


FIG. 8.8: Couple Closed Roof

A. Ridge, B. Roof, C. Truss, D. Pillars, E

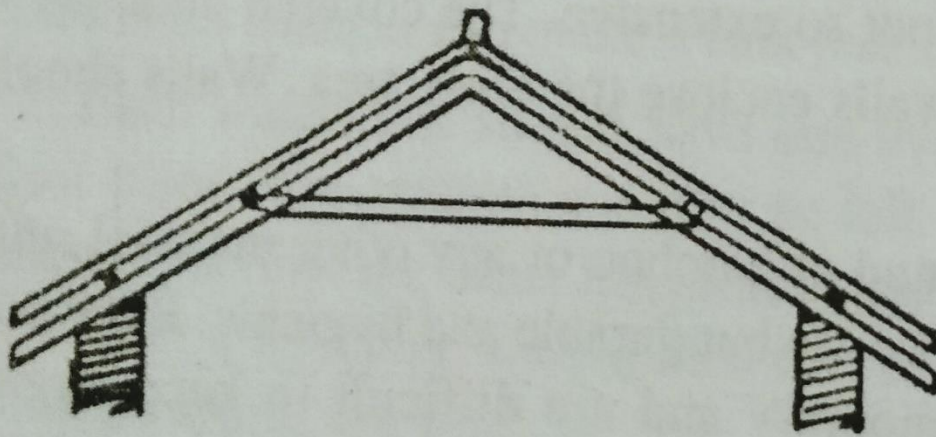


FIG. 8.9: A Collar Beam Roof

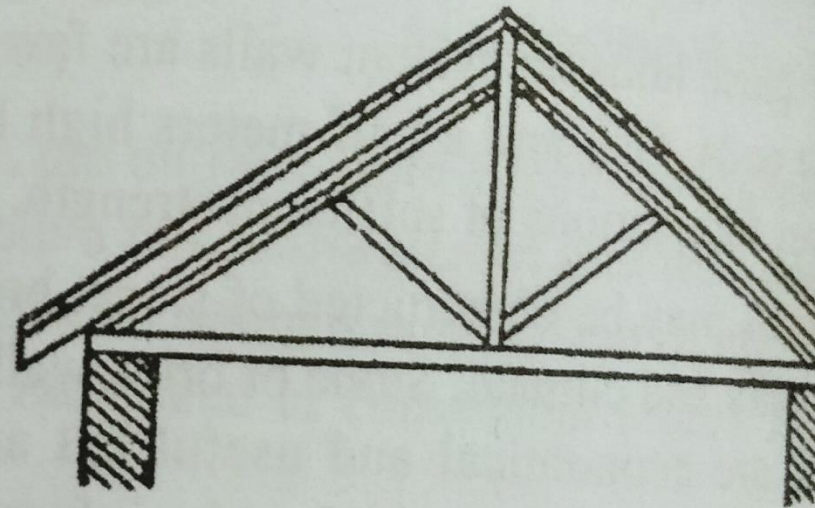
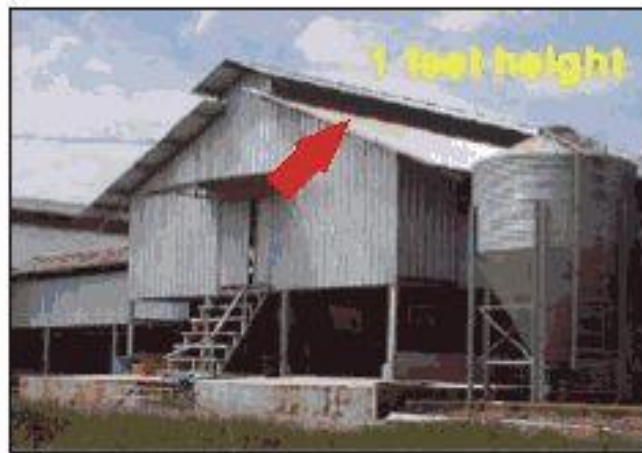
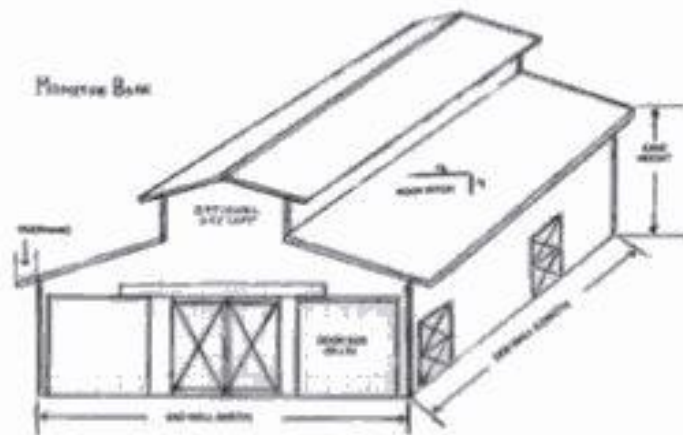


FIG. 8.10: A King-Post Truss Roof

Monitor style



Half-monitor style



Roofing material

- *(1) Tiles -It is suitable for hot climate but it should be Renewed periodically.*
- *(2)Asbestos sheet - This roof hotter during summer season.*
- *(3) Aluminium roof - costly.*
- *(4) Galvenised iron sheet- hot during summer.*
- *(5) Thatch roof - sugarcane dried leaves used and cheap, renewd periodically, fire chances*



Tiles roofing



Thatched Roofing



Galvenised iron sheet roofing



**Asbestos Sheet
Roofing**



**Aluminium Sheet
Roofing**

Floor and floor material

- *It is strong and durable for hoof of animal and movement of animal.*
- • *No slippery Qwality.*

Floor material

- *cement or concentrate floor*
- *vitriified paving bricks*
- *Stones*
- *wood*
- *Building bricks*
- *Gravels*

Synthetic material for flooring

- *(1) composition brick - non conducting warm floor and used in cold region for young animal.*
-
- *(2) Rubber floor- It is costly, used in dairy and calving shed to provide clean and soft surface.*

Design of floor

- *solid floor*
- *slatted floor*

Slatted floor - Gap b|w woods
Gap b|w two flanks is known as scat.
Flank width - 7.5-10 cm and thickness is 2•5-4 cm. This floor raise from floor grownd is 1m.



Concrete Flooring



Bricks Flooring



Gavel flooring



Wooden flooring

Wall and wall material

- *It is strong and height of 4ft from floor should be finished smoother with hard cement blaster and washable for reason of hygiene.*

Wall material

- *Building bricks.*
- *vitriified paving bricks*
- *Stones*

Dimensions of passages and gate

- *passage width :-*
- • *Feed passage along the manger*
- *For feed craft - 1.5 m*
- • *passage leading to individual shed for movement of animals - width is 1.2 m*
- • *farm road for truck and tractor -width -2.5 m*
- • *Shed gate Individual pen width - 1.2 m*
- • *farm gates width - 2.5 m*
-

Foot bath

- *These are important in protecting animal from disease and pest. Constructed at entrance of the farm.*
- *• Dimensions - It is a tank filled with germisidal solution.*



• Bottom - 6×3 m

• upper - 12×4 m

• Deep - .3 m

Farm fencehes

- *For cattle and buffalo - Barb wire should be used for fencehes.*
- • *Height - 1.5 m with four and five strands.*
- • *strands apart •4 to • 3 m*

Animal	Height	Thickness	Space b/w strand
Cattle and buffalo	150 cm	9 Gauge	36 cm
Goat	150 cm	11 Gauge	18 cm
Sheep	150cm	11Gauge	18 cm
Swine	100cm	9 Gauge	18 cm



Separation fence



Separate Animals

Ensure comfort

Iron bars durable

Check list for well managed cattle house

- Clean fresh continuous water supply
- Adequate Unspoiled food in troughs
- Dry, not slippery floor
- Dung and urine directed to covered dung pit or bio gas unit
- Well thatched roof
- No smell
- Healthy looking animals

