

## Essential requirements should be available in broiler poultry house

The basic requirements for poultry housing are:

### 1. Floor Space:

This is the most important basic principle in housing that affect growth performance as well as the general welfare of broiler.

**Stocking density** means the number of birds or live weight (kg) per square of meter. Typical stocking densities in Europe range between about 22 to 42 kg/m<sup>2</sup> or between about 11 to 25 birds per square meter.

Individual birds need more room for normal behavior and adequate exercise. If more space is allowed a greater variety of behavior can be expressed. Less space creates stressed social behavior, allowing diseases vulnerability and cannibalism and leaving weaker birds deprived of feeds or perch space.

**Table: The comfortable recommended floor and perching space for the 3 main types of chicken.**

Chicken type	Floor space (bird/m <sup>2</sup> )	Perch space (cm) per bird
Layer	3	25
Dual purpose	4	20
Broiler	4-5	15-20

**Table: The ideal floor space requirement per broiler chicken (m<sup>2</sup> /bird) upon body weight.**

Mature body weight of birds (Kg)	1.4	1.8	2.3	2.7	3.2
The ideal floor space requirement per broiler chicken (m <sup>2</sup> /bird)	0.06	0.07	0.09	0.12	0.16

For example, based on the table above, if you intend to raise 100 broilers and your target weight is 2.3 kg, you will need 9 square meters. This is how to do the calculation.

Floor space for 1 broiler at 2.3 is (0.09 m<sup>2</sup>).

Therefore, for 100 broilers is 0.09 X 100 = 9 m<sup>2</sup>.

## MINIMUM SPACE REQUIREMENTS FOR HOUSING AND YARDING POULTRY

(LARGER AREAS ARE PREFERABLE)

Type of Bird	Age of Bird	Floor Space per individual sq. ft.	Floor Space per individual sq. m.	Yard/Runway Space sq. ft.	Yard/Runway Space sq. m.
Chicks	6 weeks to adult	1.5–2	0.15–0.20		
Layer chickens	Adults	2–2.5	0.20–0.25	5–10	0.5–1
Turkeys	6 weeks to adult	3	0.28		
Turkeys	Adult breeders	6–8	0.50–0.75	20	1.8
Ducks	3 weeks to adult	3	0.28		
Ducks	Adult breeders with outside yard	2.5	0.25	10–20	1–1.8
Geese	3 weeks to adult	5	0.5		
Geese	Adult breeders with outside yard	1.5–2	0.15–0.20	20	1.8*
Guineas	6 weeks to adult	2.5	0.25		
Guineas	Adults			5–10	0.5–1

\*minimum (but better to have a permanent grass or forage area)

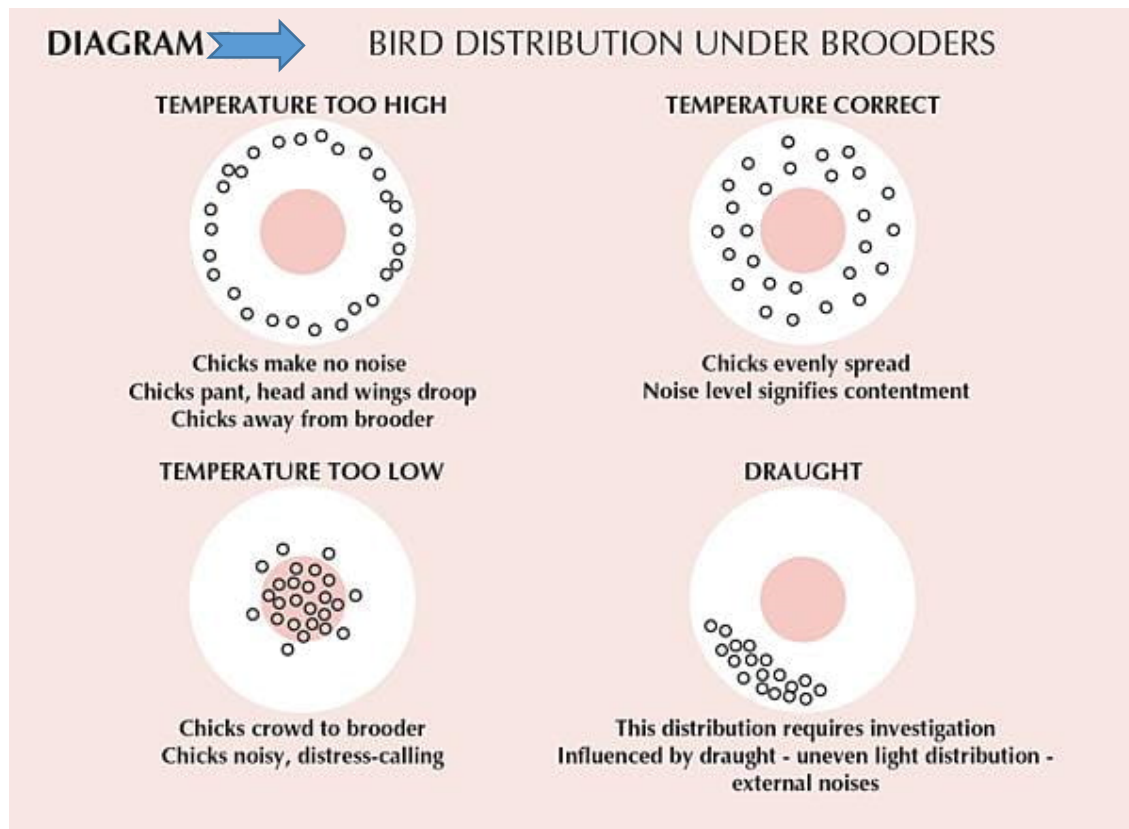
## 2. Environmental conditions

Chicks cannot regulate their own body temperature until they are around 2 weeks of age, because their thermoregulatory system is immature. Furthermore, the chicks body is not fully covered with feather so that *artificial heating* is provided during the brooding period. Preheating the house is vital at chick placement. Stabilize temperature and relative humidity for at least 24 hours prior to chick arrival, Relative humidity of 55-65%. Monitor these values regularly to ensure a uniform environment throughout the whole brooding area, the best indicator of temperature is chicks' behavior (Figure).

**Artificial heat sources are:** electric, gas, kerosene and other fuel sources (charcoal).

**Table: Provided environmental temperature for broiler chicks/age:**

Chick age	1 <sup>st</sup> week	2 <sup>nd</sup> week	3 <sup>rd</sup> week	4 <sup>th</sup> week	5 <sup>th</sup> week and on
Temperature (°C)	33-31	31-29	29-26	26-23	23-21



**Figure: Bird Distribution (Behavior) under brooder at rearing farm**

3. **Ventilation:** This is the airflow in and outside the housing. It is an important factor in housing. Ventilation provides O<sub>2</sub>; gets rid of harmful gases as CO<sub>2</sub>, NH<sub>3</sub>, H<sub>2</sub>S and etc...; moderates the weather inside the poultry house.

The air quality should meet the following minimum requirements:

O <sub>2</sub>	over	16 %	NH <sub>3</sub>	under	20 ppm
CO <sub>2</sub>	under	0,3 %	H <sub>2</sub> S	under	5 ppm
CO	under	40 ppm			

The relative humidity inside the house should be 60 - 70 %.

#### 4. **Lighting (duration and intensity):**

A light intensity and duration is essential. The amount and intensity of light affect broiler activity. A dark house leads to passive, inactive, and unproductive birds.

Correct stimulation of activity during the first five to seven days of life is necessary to help the chick adapt to the new environment and encourage feed and water intake; must provide artificial lighting.

Broiler chicks should be provided light 24 hours a day for the first 3 days, with an intensity of approximately 20 lux, this is especially important for intensively managed day-old chicks, followed by 23 hours light and one hour darkness per day, until marketing. An hour of darkness is to train the birds to acclimatize for darkness, in case of power failure, which may cause panic and trampling.

Today, due to welfare issues intermittent lighting program is promoted and recommended in Table below.

**Table: Intermittent lighting program according to birds age.**

Birds age (week)	0-1	1-2	2-4	From 4 weeks onward
Light : Dark (hours)	23:1	20:4	16:8	14:10

## 5. Feed and water

- Broilers need constant access to food and water, and feeders should be distributed evenly throughout the chicken house.
- The major production cost incurred in intensive chicken production system is feed and feed related costs which account 70-75%. Therefore, there should be proper utilization of the feed since it determines the profitability and the sustainability of the farm.
- The height of the feeder should be adjustable level with the back of the birds. The height of the feed inside the feeder, which should never be more than one-third full, to prevent them from scratching contaminated litter into the feeders and to limit feed wastage.
- The provided feed should supply the birds with their requirements upon their age.

- Cool and clean water. Water consumption depends on the ambient temperature; water temperature and NaCl content.

**Table: Chicks requirements according to chicks' number.**

No. of chicks	Brooder space	Lamps 60 W	Drinkers	Feeder
Up to 50	1/2 m <sup>2</sup>	2	2-3	2-3
50-100	1 m <sup>2</sup>	3	3-4	3-4
100-200	2 m <sup>2</sup>	3	4-5	4-5

**Table: Standards for feeders space/type**

Feeder type	Broiler
Round Feeder ∅ 40 cm	
➤ cm/bird	1.5
➤ birds/feeder	80
Straight feeder	
➤ cm/bird	4
➤ birds/meter	50

Q/ Calculate Floor area; Drinker No. and Straight feeders No. required for 7000 broiler chicks till 42 days of age till reach the average marketing target weight 2600 gm. Get benefit from the information mentioned in the table below.

Floor area (chicken/m <sup>2</sup> )	Drinker No. (chicken/drinker)	Straight feeder No. (chicken/m)
9	30	40
$\frac{7000}{9} = 777.78 \approx 778$ floor area	$\frac{7000}{30} = 233.33 \approx 234$ Drinkers needed	$\frac{7000}{40} = 175$ Strait feedres needed

Q/ Calculate number of brooders, lamps, drinkers and feeders required for 5000 broiler chicks. Take benefit from the information mentioned in the table below. (8 Marks)

Number of chicks	Brooder space (m <sup>2</sup> )	Lamps (60 W)	Drinkers	Feeders
200	2	3	5	4