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# The Handbook on Broiler Farming



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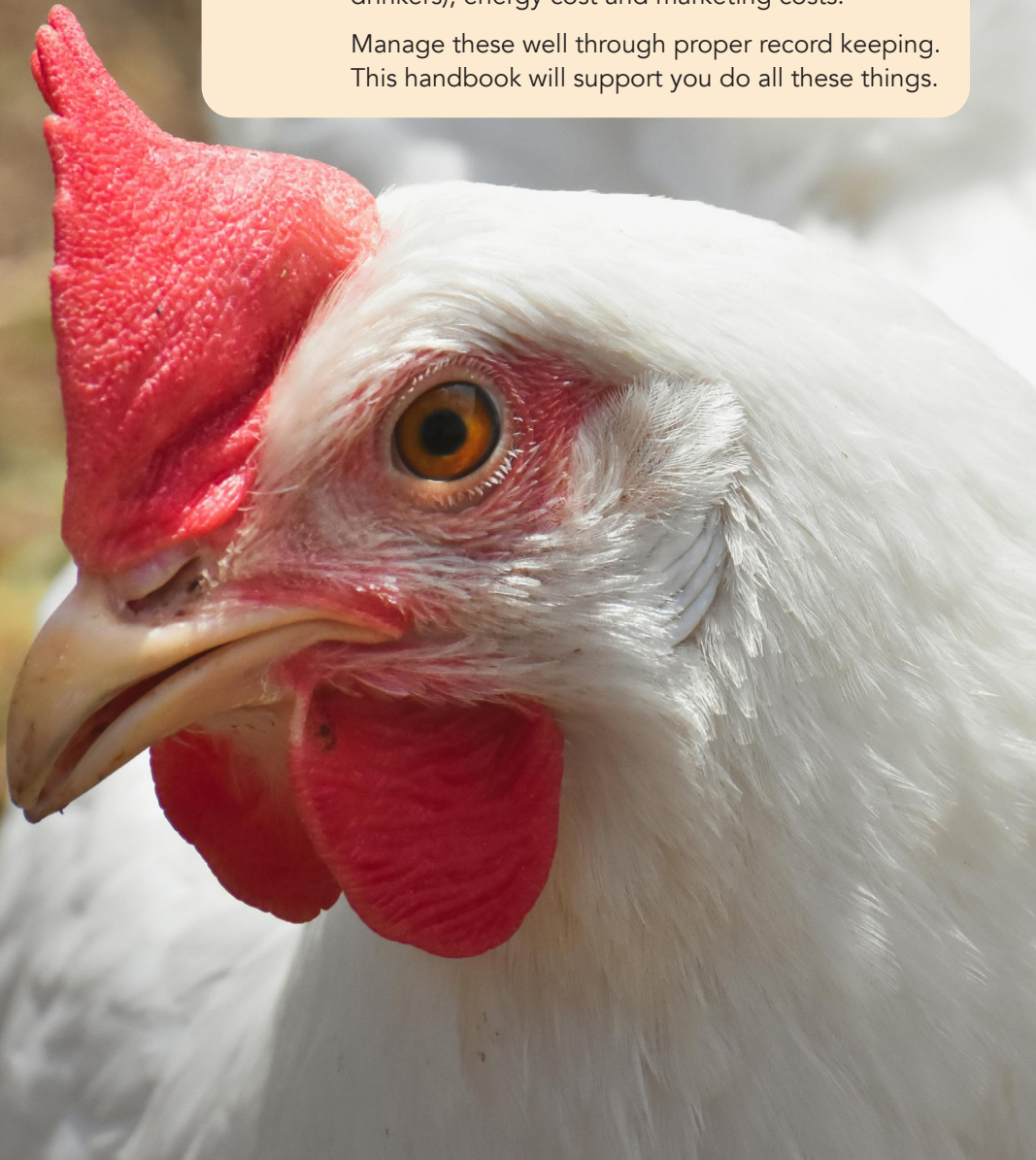


To run a successful broiler chicken business, you need both technical knowledge about production and a good understanding of the industry.



Be sure you understand and manage the cost of production well as this will affect your revenue. Your main costs will be: feeds, transport, running costs, labour, vaccination, utilities (such as feeders and drinkers), energy cost and marketing costs.

Manage these well through proper record keeping. This handbook will support you do all these things.





## What is Commercial Broiler Farming?

- This is where you farm chicken for meat as a business.
- Day Old Chicks are first given special care in a brooder house.
- Broilers are ready for sale within 5 to 6 weeks.
- Broiler chickens are the most preferred type of poultry for meat.
- Today, private companies enter into a contract with farmers to raise broiler chickens.
- This means marketing is no longer a big challenge if a farmer gets a contract.
- A broiler is therefore any young chicken below eight weeks of age and weighing 1.3 to 2 kg body weight with tender and soft meat.

## Why farm Broilers?

- It is a healthy and affordable source of protein.
- The population is growing and the demand for chicken meat is growing.
- Well-managed broiler birds can be ready for sale at 6 weeks (45 days) of age. This is a short time compared to Layers and Kienyeji Chicken and can give you quick returns.



**Broilers**

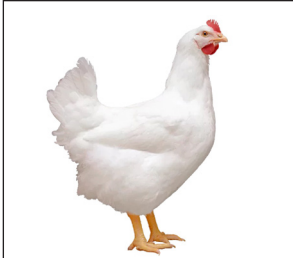
Broilers grow in 30-45 days

30 days to start income



# Breeds of Broilers

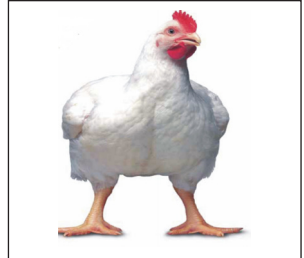
The main broiler breeds found and sold by the main hatcheries in Kenya are:



**Cobb 500**



**Ross 308**



**Arbor-Acre**



**Hubbard**



**Naked Neck Broiler**



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# Chicken Housing

Chicken housing should be carefully planned to give your chickens a comfortable place to grow well.

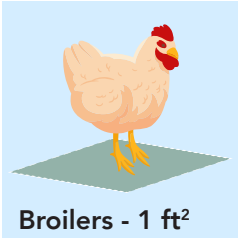
## Key Housing Elements

Your chicken house should:

- Face in an East to West direction (length wise)
  - ◆ This will stop wind and direct sun from getting in
- Be well ventilated
- Be open on both long sides, with curtains that can be rolled upwards
- Have a foot bath in front of the entrance
- Have a solid foundation and cemented floor
- Have a rain proof and reflecting roof
- Have good biosecurity – rodents or birds should not be able to enter
- *If possible, add a roof catchment and water tank*

## Dimensions

- The size of the house will depend on the number of birds you intend to keep.
  - Each broiler bird needs a space of 1 by 1 feet.
  - Each Layer chicken / Improved Kienyeji Chicken needs a space of 1.5 x 1 feet.
- If you want to start with a small number of birds, and intend to expand, it's best to build a bigger house from the start.



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Chicken Farm Blueprint



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### Example A

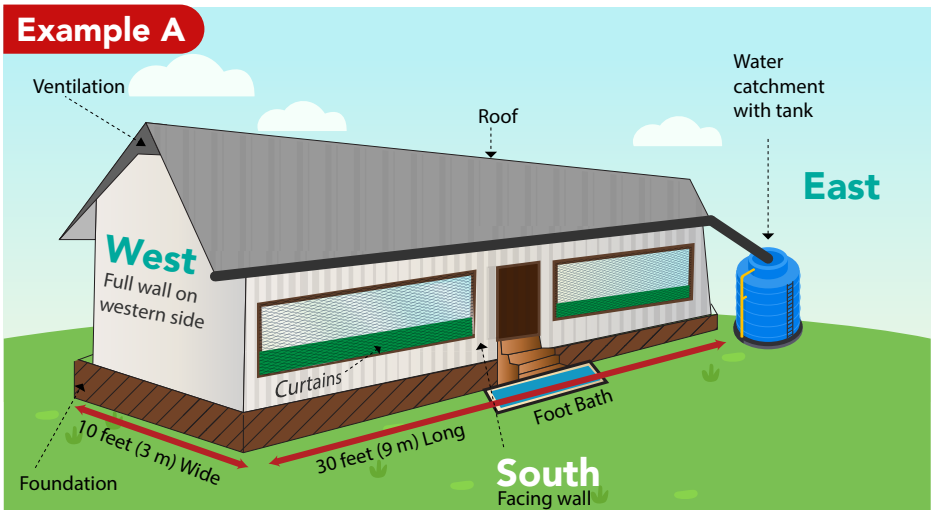
- House Dimension: 10 x 30 feet (3 x 9 m)

Holding Capacity: 300 Broilers OR 200 Layers/Improved Kienyeji Chicken

### Example B

- House Dimension: 10 x 12 feet (3 x 3.6 m)
- Holding Capacity: 120 Broilers OR 80 Layers/Improved Kienyeji Chicken.


Here is an example for chicken house which can hold 300 Broilers/ 200 Layers or Kienyeji Chickens.



# Equipment

Chicken equipment, both drinkers and feeders should always be kept clean and well-maintained. This will prevent cases of diseases in your chicken.

## Equipment for 100 Chicks

Equipment	Comments	
Feeder	<ul style="list-style-type: none"> <li>• One feeder for every 50 Day Old Chicks</li> <li>• Cleaned and disinfected</li> <li>• All with fresh starter feed</li> </ul>	
Drinkers	<ul style="list-style-type: none"> <li>• One drinker for every 50 Day Old Chicks</li> <li>• Cleaned and disinfected</li> <li>• All with fresh water</li> <li>• Use 6 L or 10 L drinkers</li> </ul> <p><b>Features of a drinker</b></p> <ul style="list-style-type: none"> <li>• Has a twist-lock system and a hanger or carry handle</li> <li>• Easy to fill, easy to clean</li> <li>• Drinkers come in different sizes 1 L, 6 L and 10 L</li> </ul>	
Litter	<ul style="list-style-type: none"> <li>• Use wood shavings or rice husks (not sawdust as chicks can choke)</li> <li>• Spread evenly to a depth of 5-10 cm.</li> <li>• The litter should be soft and dry</li> </ul>	
Heat source	<ul style="list-style-type: none"> <li>• Ensure that you have a source of heat like a brooder jiko and it is working well</li> <li>• Maintain a good temperature for your birds</li> </ul>	
Light	<ul style="list-style-type: none"> <li>• The idea is to provide 23 hours of light for the first 7 days as this dramatically improves chick development</li> </ul>	
Brooder guards	<ul style="list-style-type: none"> <li>• Round plywood is used to make the brooding area 1 m<sup>2</sup> per 50 Day Old Chick</li> <li>• The area is cleaned, disinfected and with fresh litter</li> <li>• Cover this area with paper and remove after 3 days</li> </ul>	

# Profitability of Broiler Farming: Business Case

## How to know your flock is doing well

These points will tell you whether your flock is doing well and is profitable:

- Death / Mortality: Low mortality should be the target.
- Feed Conversion Rate (FCR): This measures the rate at which birds convert feeds into weight gain. This is the standard performance measurement in the poultry industry.
- Disease incidence rate: If your chicken get a lot of diseases, they will die faster.

## How to calculate the Feed Conversion Rate (FCR)

Calculating FCR is simple: it is the amount of feed consumed by the birds and divided by the amount of weight gained. That is the amount of feed consumed per kilo of meat. The lower the FCR the better. It is an indication of the more efficient conversion of feed into meat by the birds.

$$\text{FCR} = \frac{\text{Total Feed in Kg}}{\text{Total weight in Kg}}$$

### **Example:**

A sample of 100 Broilers each weighs 2.2 kg live weight. Total 220 kg.

- Total feed consumed from chicks to maturity: (50 kg starter + 100 kg Growers + 190 kg Finisher). The total is 340 kg.
- FCR = 340 kg/220 kg
- FCR = 1.545
- As a broiler farmer: an FCR of 1.5 means that their chicken gained 1 kg of weight for every 1.5 kg of feed consumed. The lower the FCR, the more efficient animals are at converting feed into food.

## Tips to lower the FCR:

- Place the drinkers 1-1.5 m away from the feeders. This is to ensure that water and feeds do not mix and avoid contamination.
- Use feeders that don't allow the feed to pour out easily.
- Stop your birds from getting sick by vaccinating and keeping high biosecurity standards.
- Sell at market weight – don't wait too long as you will now be losing money spent on feeds.
  - Work backwards from key events such as Christmas or Easter.

*Example: If you want to sell on Christmas Day, subtract 6 weeks (45 Days). This means you need Day Old Chicks on the 10th of November.*

## Record Keeping in a Broiler Farm

**Good record-keeping is very important:**

- It helps you monitor the growth and know how profitable your business is.
- You will be able to predict early and project your cash flows.
- It gives early warning in case of a problem and allows you to see if management changes have made a difference to overall flock performance.
- Daily records should be on display for each chicken house.

## Records needed for Broiler Production

Event	Record	Comment
Chick placement	<ul style="list-style-type: none"><li>• Number of Day Old Chicks</li><li>• Source of birds</li><li>• Date and time of arrival</li><li>• Chick quality</li></ul>	<ul style="list-style-type: none"><li>• Live weight</li><li>• Uniformity</li><li>• Number of deaths on arrival</li></ul>
Mortality	<ul style="list-style-type: none"><li>• Daily</li><li>• Weekly</li><li>• Cumulative</li></ul>	<ul style="list-style-type: none"><li>• Post mortem records</li></ul>
Medication	<ul style="list-style-type: none"><li>• Date</li><li>• Amount</li><li>• Batch Number</li></ul>	<ul style="list-style-type: none"><li>• As per veterinary instructions</li></ul>



Vaccination	<ul style="list-style-type: none"> <li>• Date of vaccination</li> <li>• Vaccine type</li> <li>• Batch number</li> </ul>	<ul style="list-style-type: none"> <li>• Any unexpected reaction should be recorded</li> </ul>
Feed	<ul style="list-style-type: none"> <li>• Date of delivery</li> <li>• Quantity</li> <li>• Feed type</li> <li>• Supplier</li> <li>• Feed withdrawal date</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate feed consumed should be recorded</li> <li>• Quality of feed</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Daily consumption</li> <li>• Water to feed ration</li> <li>• Water quality</li> </ul>	<ul style="list-style-type: none"> <li>• Sudden change in water intake should be a cause of concern</li> </ul>
Environment	<ul style="list-style-type: none"> <li>• Temperature</li> <li>• Air quality</li> <li>• Litter quality</li> </ul>	
Harvesting	<ul style="list-style-type: none"> <li>• Number of birds sold</li> <li>• Time and date</li> </ul>	
Information from processors	<ul style="list-style-type: none"> <li>• Carcass quality</li> <li>• Health inspection</li> </ul>	



## Chick Management

### Brooding

Brooding is a period right after the chicks have hatched and special care and attention needed to support their health and survival because:

- Hatched chicks can't control their own body temperature in the first weeks.
- You need to provide extra heat otherwise chicks will be too cold and may not eat well, drink enough or may even die.

# Chick's Arrival

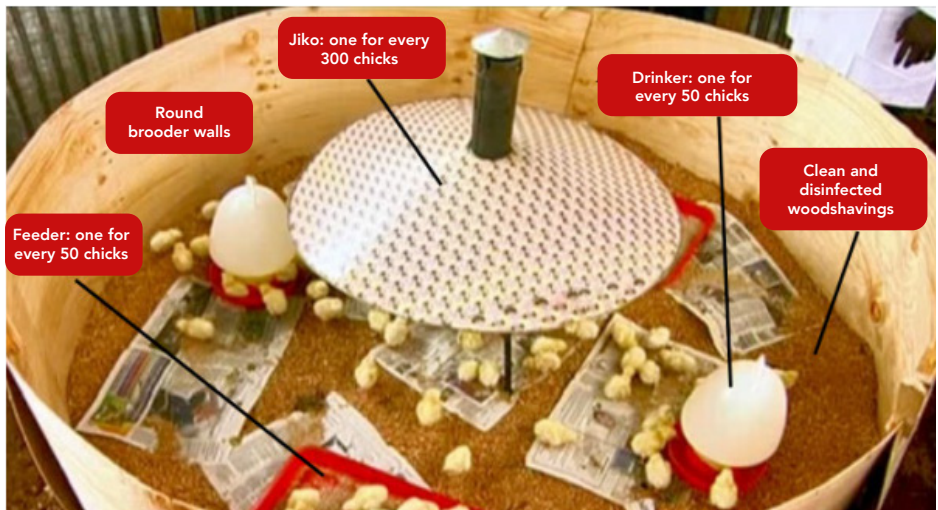
## How should you prepare for the arrival of chicks?

- The poultry house and all equipment should be cleaned very well and disinfected.
- The floor should be covered with wood shaving or rice husks to a depth of 5-10 cm.
- The brooder should be in place.
- Check the brooder heater and adjust if need be.
- Enough warmth in the first 10-14 days is very important for the chicks.
- Have the feeders and drinkers in place. Chicks usually look for water first.
- Have some small amounts of starter feed scattered on paper on the floor of the brooder so that the chicks can start to eat.

## Good Brooding Management

**Good brooding management will mean your chicks are uniform.**

- Uniformity is the key to good and consistent results.
- The critical factors are temperature, air quality, water and feed.
- When these are correct, 80% of your success will be achieved



# Temperature Management

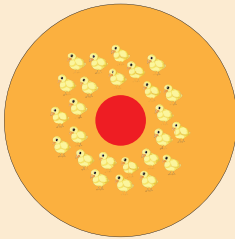
The brooding temperature is good if the chick's feet are warm.

- The ideal temperature of 33 °C is recommended. This can thereafter be reduced by 2 °C every 3 days depending on the season.
- Under very good brooding, the temperature should be 27 °C by the 14th day.

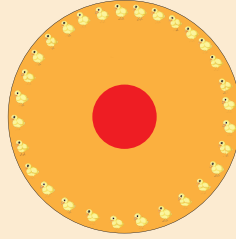
## Chicken Behaviour in relation to Temperature

Observe your chicks and see how they behave – this will tell you whether they are too hot, too cold or just right. When the brooding temperature is just right, the birds will be evenly spread within the brooding area.

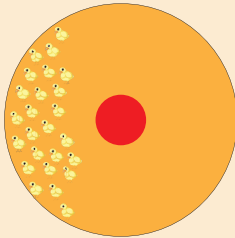
**Too cold**  
No activity, chicks get close to heat source.  
**Action:** Increase temperature.



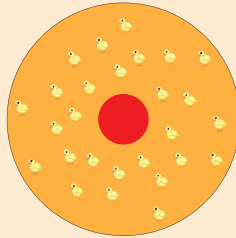
**Too hot**  
No activity, even spread, chicks are away from heat source.  
**Action:** Lower temperature.



**Windy**  
No activity, chicks move to one side of brooder.  
**Action:** Check breeze, light and noise around.



**Right temperature**  
Good activity, chicks are spread well.  
No action needed.



**Chicks need to be kept at the right temperature to eat, drink and grow well. After 14 days (if warm) or 21 days (if cold) take your chicks out of the brooder.**

### Did you know?



You can check the chick's temperature by placing its feet on your face.

- If the feet feel cold, they are cold, and you need to increase the temperature.
- If their feet feel hot, they are hot and you need to reduce the temperature of the brooding area.
- If their feet feel the same temperature as your face, they are OK.

## Spacing at the Brooder

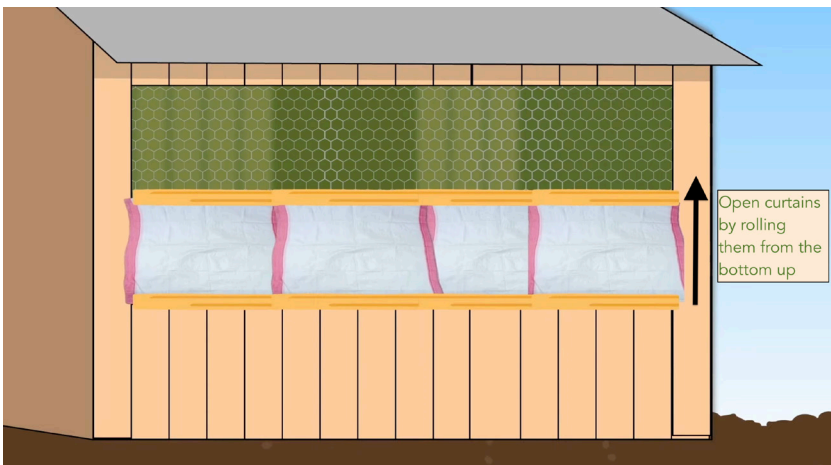
- The brooding area should take up 1/3 of the house during the first week of the bird's life.
- Expand the brooder area every 2 days and the birds should take up 2/3 of the house by the time they are 14 days old.
- The birds take up the whole house by the time they are 3 weeks old.
- Good bird to space ratio means the birds can access water and feed easily and grow well.
- If there is not enough space, you will see higher death among your flock due to starving out, poor uniformity and stunted birds.

## Brooder Ventilation

**During brooding, it is important to have good airflow:**

- Good air flow helps get rid of bad gases like ammonia and keeps the litter fresh and dry.
  - This reduces disease.
- Chicks need fresh air to grow and be productive.
- If the chicks are hot, roll the curtains from the bottom up (not from the top down). This is to avoid draft/wind. Chicks are sensitive to wind and the cold.
- A good house should have a window of at least four feet for ventilation.

This might mean your costs for keeping the brooder warm are higher, but airflow is very important.

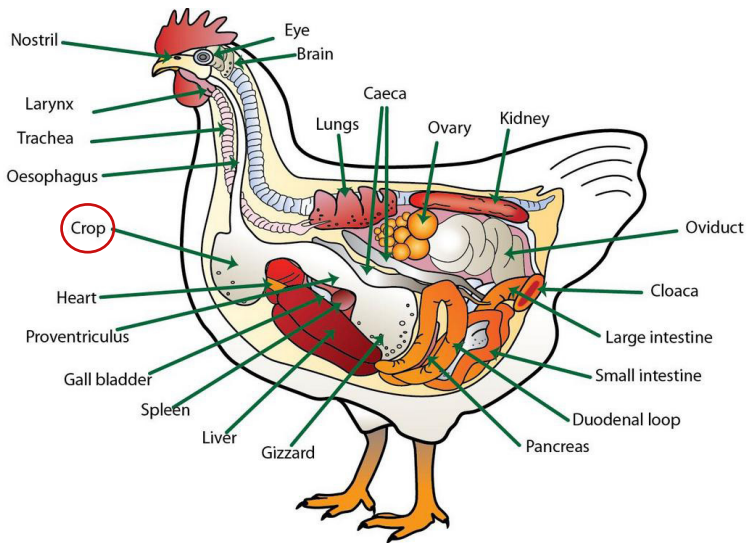


Feed is the largest cost in broiler farming. Your chicken needs regular and good quality feeds and clean drinking water to grow well.

- Upon arrival chicks should have access to clean and fresh starter feed right away.
- This is to ensure we get good final performance and growth.
- If chicks are feeding and drinking well, they will store their feed and water mix in what is called a “crop”

## Crop Fill Check

**What’s a crop?** The crop is a muscular bag at the bottom of a hen’s neck which stores feed for the day.



- Gentle handling of the crop within the first 24 hours can indicate the chick’s progress.
- Sample 30-40 birds, 2 hours after arrival to ensure all chicks have found feed and water.
- Add small amounts of feed often to encourage feeding.
- Put the feeders at a height the Day Old Chicks can easily access.
- Monitor early feeding of your Day Old Chicks.
  - In the first 12 hours, the crop should be 85% full
  - After 24 hours, the crop should be 95% full
  - After 48 hours the crop should be 100% full

## Feeding Schedule

The broiler feed is given to Broilers in three phases:

Stage	Phase 1	Phase 2	Phase 3
<b>Types of feed given</b>	<b>Broiler Starter</b>	<b>Broiler Growers</b>	<b>Broiler Finisher</b>
	<ul style="list-style-type: none"> <li>• These are fine crumbles</li> <li>• They are small in size and do not have dust</li> </ul>	<ul style="list-style-type: none"> <li>• Small pellets</li> <li>• A bit larger than the Broiler Starter</li> </ul>	<ul style="list-style-type: none"> <li>• Pellets larger than Broiler Growers Feed</li> </ul>
<b>Days</b>	Day 0 to 13	Day 14 to 24	Day 25 to 35 or point of sale
<b>Quantity of feed</b>	350 g per chick for the 13 days	1- 1.5 kg per bird over two weeks	1.5 - 2 kg per bird from day 25 till you sell
<b>Changing feeds</b>	Start to mix with Broiler Growers at day 11	Start to mix with Broiler Finisher at day 23	Continue to give to point of sale

### How and when to change feeds

When changing the type of feeds, do it slowly. Start by mixing a small amount of the new feeds with the old one and increase daily.

### CHANGE BROILER STARTER TO BROILER GROWERS

Change between Day 11 - 14		
Day	Percentage of Broiler Starter	Percentage of Broiler Growers
11	75%	25%
12	50%	50%
13	25%	75%
14	0%	100%

## CHANGE BROILER GROWERS TO BROILER FINISHER

Change between Day 23 -25		
Day	Percentage of Broiler Growers	Percentage of Broiler Finisher
23	50%	50%
24	25%	75%
25	0%	100%

### Notes

- Use the right size of feeders depending on the age of your birds
- Avoid feeds being wasted on the ground through spillage
- The feeders should always be clean to ensure feed is fresh
- Keep ratio of 1 feeder for every 50 chicks
- Change the ratio and size of feeders as the birds grow

## Housing Management

### Water Management

**Broilers need water for proper growth.**

- Provide clean and cool water every day
- Chicks should not have to travel more than 2 m to find water inside the brooding area
- Lack of water can slow down on feed conversion
- The temperatures (how hot or cold), relative humidity (how moist or dry), the type of feed given to birds and the rate of body weight gain affects the amount of water birds take
- Ensure that no water touches the litter. If this happens, it becomes a breeding ground for poultry disease



**Remember!**  
About 65-78% of a chicken's body is made up of water.

## Light Management

Chicks should be kept in a lot of light for the first days, as it helps improve their development. Keep the lights on at night and only allow little hours of darkness in the beginning.

Darkness schedule:

- First 7 days = 1 hour of darkness a day
- On the 8th day = 4 hours of darkness
- From 9th - 14th day = 14 hours of darkness

## Litter Management

Litter is wood shavings spread on the floor to absorb moisture, break down chicken droppings, and provide warmth to the birds.

**Manage your litter well to support:**

- Good growth in your chicks
- A good healthy flock with low sickness and disease risk
- High-quality meat

**Here some tips:**

- Use cemented floors as they are easy to clean
- Cover the floor with wood shavings to keep chicks warm
- Sprinkle a mixture of wood ash and fertiliser grade superphosphate in the ratio of 4:1
- Use 4 parts of wood ash to 1 part of fertiliser grade superphosphate
- Apply 5 kg of the mixture per 10 m<sup>2</sup> area, then mix it up with the litter
- When you see dirt on the bird's feet, it means that you have not managed your litter well



### *Did you know?*

Fertiliser grade superphosphate is a type of fertiliser used in the chicken house to help reduce the release of Ammonia gas. Ammonia gas can be poisonous and may make the birds blind and affect their normal growth.



## Stress Management

**When chicks are stressed, they will die – avoid this by all means!**

The main causes of stress in broiler farming include:

- Noise from people
- Predators such as cats, rats and dogs
- Temperature is either too hot or too cold
- Poor biosecurity

## Biosecurity and Biosafety

*Prevention is better than cure!*



Ensure the house is cleared of birds 14 days before you bring in a new batch.

**This will allow you to clean and sanitise the house and get rid of diseases that only survive in birds.**

## Good Practices to protect your Chicken against Disease and Enemies



Only allow essential staff to enter the chicken house.



Place a footbath with a disinfectant like Kupacide outside the chicken house.

Each person working in the house should have their own special pair of gumboots that they wear when entering the house.



Remove old litter, dirty bags and rubbish away from the house.



### **Remember!**

*Remove sick birds and bury dead birds as soon as you notice them. Never eat or sell sick birds as they may make the family and others sick.*



Throw away old feed as they may have moulds or produce toxins.



Keep birds of the same age together to reduce disease outbreaks.



Ensure no rodents or wild animals can enter the house.



Regularly clean and dry all equipment.



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