



# CHICKEN

Poultry are kept worldwide providing eggs, meat and feathers. In Kenya, three quarters of all chicken are indigenous chicken. They are mainly kept by rural households. Rearing broilers and keeping layers are often an urban and peri-urban business around ready markets for meat, eggs, and feeds.

## Indigenous chicken

In terms of productivity, indigenous chicken can not be compared to hybrid breeds. But with good management, they have a very good potential for improving the income of their owners. They are less demanding, healthier and easier to keep than hybrid breeds and their products fetch good prices on the market.

To improve production and profitability of your chicken, whether indigenous or hybrid breeds, first make sure they are well fed and housed, because most poultry problems come from poor feeding and housing!



### Feeding

Providing good and sufficient feed, in particular to small chicks, is one of the best ways to raise production and to prevent diseases.

- Feed your chicken every morning and every evening.
- Offer the feeds on a clean surface or from feeders made especially for chicken, e.g. "Naivasha" feeders.
- Store feeds in a dry and clean place to avoid contamination and spread of diseases.

### Water

Clean water must be provided at all times.

- Change and refill the water every day to avoid the spread of waterborne diseases like Fowl Cholera.
- Drinking containers must always be washed out and kept clean.
- Always offer water in the same place. This also makes it easy to medicate the chicken.
- Daily addition of EM (effective micro-organisms) helps to prevent diseases like coccidiosis.
- Scavenging poultry may pick up parasites or diseases when drinking water from infested puddles.

### Housing

A good house protects chicken not only from bad weather and predators. It is:

- **Dry, clean and airy**, to prevent diseases like coccidiosis. Clean the chicken house and add fresh litter at least once a week.
- **Spacious**. If there is not enough space and chickens are crowded into small rooms, diseases will easily pass from one bird to another. The birds may also wound or even kill each other, as stronger ones naturally peck weaker ones.
- **Easy to clean**, otherwise diseases may spread quickly.
- **Equipped with perches**, because chicken roost and sleep above the ground. Provide bars or branches of two inches in diameter, and fix them horizontally, at least 30 cm above the ground, depending on the size of the chicken.
- **Equipped with quiet nesting places for layers** to lay their eggs. Provide a clean, darker laying area or some nesting boxes (one for every 5 hens).

### Which feeds do chicken need?

**Grains:** Indigenous chickens feed on maize, rice, other grains, and remains of ugali.

**Proteins:** Chicken need protein-rich feeds for growth and egg production. If your chicken scavenge around your compound, they will look for insects and worms, but they will still need some supplement.

Cooked beans, Omena fish, crushed groundnuts, sunflower cake, 'Busaa' waste (dregs /Machicha), and chicken starter feeds are suitable.

Dung heaps from the waste of cattle, goats and sheep are excellent sources of insect protein, but they may also be a source of parasites (e.g. coccidia) and other diseases.

**Greens:** All chicken need fresh vegetation such as grass and vegetables. They contain vitamins which keep them healthy.

**Minerals and stones:** Laying hens need calcium for their eggshells. Offer limestone, crushed eggshells, fishmeal, or bone meal. Birds need to ingest small stones for their digestion.

### The chicken run

- Local breeds need free access to outdoor areas during the day.
- If you have a confined chicken run, allow a space of 4 square meters per adult bird.
- Fence two areas: one to be used by the chicken, one for re-growth. Rotate the chicken between the two areas.
- Chicken need dry places for dust bathing to control parasites. Add sand and ash or Diatomite to this area regularly.

## Breeding with indigenous chicken

A clever breeding management helps you to increase the productivity of your chicken or to obtain a higher number of offspring from the chicken stock you have.

### Feeding and general management

Hens lay eggs earlier and have more clutches per year if they are healthy, well fed, protected from predators, vaccinated, and if external parasites are controlled. This will also increase the survival rates of their chicks.

### Improved indigenous breeds

Improved indigenous chicken can be bought from private breeders or from Naivasha research station.

### New cocks

Inbreeding reduces vitality seriously! Introduce one new cock for every 10 hens every two years to avoid this.

### Brooder management

Protect brooding hens from predators, rodents and distress. A brooder hen can hatch 15 eggs per sitting if she is comfortable and feels safe. Keep food and clean water near the hen during all the time. This will make sure that a maximum number of chicks hatch.

## Rearing chicks in an artificial brooder

When chicks are taken away from their mother or brought in from a hatchery, they need to be given to a separate brooding area. This space must be heated and draught free.

<b>Space</b>	On one square meter, you can place up to 100 chicks. Gradually increase this area to 6 square meters while the birds are growing.
<b>Walls</b>	To keep a warm climate, put up walls around the area, about 60 cm high (from hardboard, wood etc).
<b>Litter</b>	Provide a thick layer of litter from dried grass or leaves, wood shavings, straw etc. for bedding.
<b>Heat sources</b>	Kerosene lamps: one lamp for 50 chicks Electricity: one infra red lamp for 250 chicks Charcoal Jiko: one for 500 chicks Beware of brooder fires! When using kerosene or charcoal, take all precautions!
<b>Temperature</b>	32° C during the first week 28° C in the second week 24° C in the third week. After this, the chicks are at ease with normal temperatures around 20° C.  Check regularly whether the chicks are at ease. If it is too hot, they will be panting and move away from the heat source. If they start to huddle and crowd around the heat source, it is too cold.

## Continuous brooding

- Poultry can be used to sit on eggs continuously for two or more times. When the chicks hatch, they are taken away from the hen after seven or eight days and given into an artificial brooder. Since a hen is still in a brooding mood after that, you can give her new eggs to sit on. Take the eggs from a few good layers which can supply eggs for hatching.
- If you don't have enough eggs to give to a brooding hen immediately, you can give her a false Kisii soapstone egg to keep her happy until you have collected enough eggs from your other chicken. The hen is then given the genuine eggs and continues brooding until the chicks hatch.
- If a brooding hen is left without eggs after the chicks were removed from her, she will usually start laying again after about two weeks.
- For the chicks you removed from the brooder hens, you need a heated brooding room where you can raise them (see below).

## Collecting and storing eggs for setting

- Each egg from your layers must be clearly marked with the date when it was laid. This is necessary to ensure that all the eggs you give to a brooder hen have about the same age and will hatch at the same time.
- Handle all eggs very carefully! Store them with the broad end facing upwards, as at this end there is an air sack through which the egg breathes. Store the eggs in a clean and dry place to prevent rotting. Eggs older than 14 days must not be used for hatching.



<b>Feed</b>	For layers, use chick mash for 8 weeks. For broilers, use starter mash for 3-4 weeks, then finisher mash.
<b>Water</b>	Make sure there is always clean water. Water feeders and grain feeders too must always be clean.
<b>Bedding</b>	Because young chicks are very delicate and susceptible to diseases, their bedding must always be dry. Clean and dry bedding is the best prevention for coccidiosis and other diseases! As the litter becomes soiled and moist, cover it with a thick layer of new material.

Broiler chicks are ready to leave the brooding room after 3 to 4 weeks, when the yellow downy feathers on their heads have disappeared. They need much more space now, as they grow quickly. Layer chicks grow more slowly (see picture on the last page) and are kept in the brooder for 5 weeks before they are moved to a larger space.

## Management of hybrid layers

Keeping hybrid birds requires some management abilities and investments in housing, equipment, feeds and birds. You have to calculate well before you start the business! Usually, the profit increases with the number of birds. But as with all agricultural production, make sure the products can be sold and your costs will be covered.

### Housing layers

Dry and clean housing is essential also for hybrid breeds. Before you bring new birds to the farm, prepare and disinfect all houses and equipment (see paragraph "Prevention of chicken diseases" on the last page).

#### Space

6 to 8 laying hens per square metre are adequate.

#### Litter

A deep litter system is recommended. It absorbs the droppings and provides excellent composting material. The floor is preferably cemented and the litter material placed 15 cm deep. Wood shavings, rice husks or similar may be used. Remove soiled litter once a week and provide some fresh material regularly.

#### Perches

Provide perches where the birds can roost and sleep at night. Wooden bars or branches with a diameter of around one inch are ideal. Each hen needs about 30 cm pole length.

#### Nesting boxes

Layers need areas where they can lay their eggs; otherwise they drop them all over the place. Allow one nesting box for every four or five hens. Nesting places should provide some privacy and darkness. You may also use crates or cardboard boxes of the right size, and fill some bedding into them.

#### Ventilation

Chickens need free flow of fresh air. In the front of the building, place an opening which is 1 m wide and fix wire mesh to it. At the back, the opening can be smaller. In hot areas, front ventilation should be made wider. During cold weather, the opening can be covered with curtains.

#### Light

A person should be able to read a newspaper at the centre of the building. Transparent roofing sheets can improve lighting.



### Feeding layers

Hybrid layers are easy to feed, as manufactured and nutritionally balanced mashes are used.

Chick mash from day old to 8 weeks. Each chick will consume about 2 kg mash during this period.

Grower mash from 9 weeks to 18 weeks. Each grower will consume about 8 kg mash during this period.

Layer mash from 19 to 75 weeks. Allow 120 g per bird and per day. One hen consumes about 45 kg of mash annually.

- Provide fresh feeds and water two times daily.
- For bright yellow egg yolks, greens must be offered every day. This may be grass, legumes, vegetable wastes etc.
- Laying hens also need calcium to produce eggshells. Offer limestone, crushed eggshells, bone meal, or fishmeal.

#### Optimize feed use!

Feeds are expensive and usually constitute about 80% of total production costs. It is advantageous to buy properly designed equipment to avoid feed wastage.

Store feeds in rodent proof, rain proof and well ventilated areas. Place them above the floor on palets. They should not be stored for long periods, because they will deteriorate.

Always buy feeds from reputable feed manufacturers!

### Handling Eggs

- Collect the eggs 2 times a day.
- Place them with the broad end up in the egg tray.
- Do not stack more than six trays on top of each other.
- Store eggs in a cool dry place to prevent deterioration.

### Outside run

Birds need fresh air and sunshine. Also hybrid chickens do better when they have access to outside areas, possibly with bushes and trees.

Provide an area for the chickens where they can sun themselves and take dust baths during the day. Add Diatomite! This helps keep down external parasites, and birds will be more resistant to diseases.

Allow a few square meters for each bird. Make sure that openings where the hens go in and out of the house are wide enough that birds can cross.

If birds of prey are a problem, you should cover the whole area with nettings.

### Molting

After about 12 months of laying, hens have a period of resting or molting. A molting chicken will appear ragged, as the feathers thin out and re-grow only later.

Normal molting of layers takes about 10 weeks. Egg production will drop for several weeks.

After this, and with good management, the birds can come back to good production for a second year.

## Management of broilers

After broilers are removed from the artificial brooder, they can be kept in the same way as layers. Indigenous broilers are less demanding than hybrid broilers, but they have to be fed longer before they can be slaughtered.

Because hybrid broilers grow very fast, their bones are usually weak. To keep them healthy, they need sun and exercise in an outside area. They will also not do well on other feeds than specially manufactured ones.

**Starter mix** For the first 3 - 4 weeks. Each chick will consume ca. 1.2 kg mash

**Finisher mix** During weeks 4 to 8. Each broiler will consume about 3.5 kg mash

In addition to the broiler feed, provide greens for pecking and for vitamins!



They are both 29 days old:  
Hybrid layer chick (left)  
Hybrid broiler chick (right)

## Prevention of chicken diseases

Chicken, and especially small chicks, are very susceptible to various diseases and parasites. The reason is often that they are kept in large numbers under unclean conditions. The following preventive measures will help you to avoid the most common chicken diseases.

### Clean housing

The best way to prevent diseases is to keep poultry sheds clean at all times. Wash the floors regularly with organic acaricides such as neem powder. In houses built from bricks, apply lime wash or other disinfectants to floor and walls. Provide dry litter and change it regularly.

### Space

Do not put too many birds together. Different species of poultry (hens, turkeys, pigeons, ducks and guinea fowls) should be kept separately.

### Adequate feed and clean water

This is especially essential for small chicks.

### Chicken run

Give access to sunlight and to an outdoor area where the chicken can move freely. If this is a confinement, change the area every few months.

### Separate sick birds

- Sick poultry can spread disease very quickly. Isolate and medicate sick birds.
- Kill birds that show no sign of recovery. Burn or bury killed birds and do not eat them - diseases can sometimes transfer to human beings even if the meat has been well cooked.
- Also cull birds that are sickly or out of production.

### Separate new birds

Keep all new birds separately and observe them for any signs of disease before introducing them to the flock.

### Disinfect before new birds are brought in

As soon as one flock has been moved out, remove all manure and litter. Clean all houses, equipment and utensils with lime wash or other disinfectants.

If you had continuous problems with chicken diseases, disinfect everything and leave the housing empty for 2 months. After fowl typhoid, wait 4 months before bringing in new stock.

## Organic remedies for parasite and disease control

- **Diatomite:** External parasites (mites and soft ticks) can be controlled using Diatomite. Dust it on your chicken regularly.
- **Aloe vera** and other plant extracts can prevent infections when added to the drinking water regularly.
- **Effective Micro-organisms:** Add a cupful of E.M. to 5 litres of drinking water every day. This helps build up immunity and vitality of the birds and is especially good for young chicks.
- **Vinegar** can be added to the chicken water to control bloody stool. Use half a cup of vinegar for 5 litres of water.
- **Extracts from *Erythrina abyssinica*** (rubber stamp tree or *omurembe* in Luhya) and ***Croton megalocarpus*** (*mukinduri* in Kikuyu and *musine* in Luhya) have antibiotic properties.

**Suggestion:** Boil some bark of both trees in water. Give a thin solution to the chicken to drink for 3 days. Repeat this every 3 weeks.

## Vaccinations

Vaccinations as recommended by the vet will prevent unnecessary losses and reduce spreading of the most important chicken diseases. A qualified livestock officer will be able to provide advice on how and when to vaccinate.

### Important vaccinations

**Marek disease:** This vaccination is usually administered at the hatchery on young chicks.

**Newcastle disease:** Usually applied at 2 to 3 weeks and at 18 weeks, then after every 6 months.

**Fowl typhoid / Fowl pox:** applied at 8 weeks in high risk areas and at 18 weeks in low risk areas.

**Gumboro disease:** Usually applied in drinking water at the 4th and 14th day.

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[www.organicfarmermagazine.org](http://www.organicfarmermagazine.org) Email: [info@organickenya.org](mailto:info@organickenya.org)

P.O. Box 14352, 00800 Nairobi. Tel: 020 44 50 398.

Compiled by Theresa Szekely

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