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# Local Poultry Farming in West Africa

By ECHO West Africa Staff

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## Introduction

This Technical Note is designed for agricultural extension agents and field facilitators who support small-scale poultry keepers in West Africa. It provides a step-by-step, practical overview of how to move from traditional, scavenging-based flocks toward improved semi-intensive management that remains realistic for low-income households.

This *ECHO Technical Note* focuses on four core topics for poultry management; housing and equipment, feeding with locally available resources, breed and reproduction management, and hygiene and health. This resource emphasizes low-cost techniques, use of local materials, and context-appropriate innovations that can strengthen small-scale poultry enterprises in West Africa (Figure 1).



**Figure 1.** Local chicken flock in West Africa.  
Source: ECHO West Africa

## Context

In many rural areas of West Africa, the majority of smallholder farmers live in chronic economic insecurity, worsened by low agricultural incomes, limited access to inputs and markets, and vulnerability to climatic and economic shocks. Lowder *et al.* (2025) noted that as cultivated land areas decrease for rural farmers, there is a growing need to diversify income streams to support both on-farm and off-farm economic stability. Wudil *et al.* (2022) discussed trade disruptions, rising food prices, and conflict as contributors to hunger and poverty in West Africa.

This structural insecurity makes it difficult to meet basic needs (food, health, education), forcing rural families to adopt survival strategies that are often ineffective, or even destructive in the long term. As Sanou (2015) points

out, “the inability of small producers to generate a regular income exposes them to a spiral of poverty and dependence on external aid.”

In response to this situation, diversifying income sources is an essential lever for improving the economic resilience of small-scale farmers. Livestock farming, and especially local poultry farming, stands out as an accessible, culturally integrated, and highly profitable option. As such, raising local chickens occupies a central place in the traditional farming systems of many families in West Africa. Resilient, undemanding, and well adapted to local climatic conditions, chickens play a crucial role in the food security of rural households while also constituting a regular source of income. However, the lack of technical skills, health monitoring, and sector organization prevents many producers from fully benefiting from it.

It is within this dynamic that ECHO West Africa operates, supporting small-scale farmers by strengthening their capacities within a vision of integral transformation. By emphasizing practical training, technical support, and the use of local resources, ECHO West Africa encourages rural communities to adopt sustainable local poultry production models, not only to improve food security but also as an income-generating complementary activity. This approach directly contributes to a holistic vision of development, integrating social, economic, and spiritual dimensions.

## **Local poultry production systems**

Poultry production systems vary according to several factors: species (chickens, guinea fowl, turkeys, etc.), type of poultry (broilers, layers, etc.), production objectives (meat, eggs, chicks), available resources, climate, and local regulations.

Local chicken production systems vary, with free range, semi-free range, backyard, or fully housed systems. Small-producer chicken systems, appropriate for village-scale production, are of two main types: the traditional extensive system and the improved semi-intensive system.

### **Traditional extensive system**

The traditional extensive system is a family-based model in which local chickens roam freely and feed mainly by scavenging, with little infrastructure and limited health monitoring. It relies on local resources and plays an important social and food-related role. It is the dominant system in most rural areas of West Africa. Playing a key role in household food security and women’s empowerment, characteristics of this approach include:

- Scavenging-based feeding, supplemented by kitchen leftovers or local cereals.
- Rudimentary infrastructure: makeshift shelters or mud chicken coops.
- Little or no health monitoring, although some farmers administer basic treatments.
- Low productivity, but high resilience and autonomy.
- A multifunctional role supplying food and supplementary income, with additional cultural functions (rites, gifts, etc.).

## Improved semi-intensive system

The improved semi-intensive system is a structured production approach in which local chickens are raised in enclosed poultry houses, receive supplementary feeding, and benefit from regular health monitoring. It is oriented toward economic profitability and adopted by farmers seeking to improve growth, egg laying, and poultry survival. It is characterized by:

- Partially controlled feeding: cereals, agro-industrial by-products, supplements.
- Improved infrastructure: enclosed poultry houses, basic equipment (feeders, waterers).
- Regular health monitoring: vaccination, preventive treatments.
- Better productivity: more regular laying, faster growth.
- A clear economic objective, especially among youth and women's groups.

These two systems often coexist where traditional farmers gradually transition to semi-intensive practices. Adoption of these practices typically improves chick survival, reduces mortality (which can be up to 50% in the overall flock and up to 75% in chicks up to 2 months old [Grace *et al.*, 2024]), and increases income.

## Success factors in local chicken farming

Successfully running a small local chicken enterprise requires good organization, discipline, and effective management. To do so, it is necessary, among other things, to:

- Acquire training for yourself or your poultry keeper.
- Build suitable housing.
- Strictly observe hygiene and disease prevention measures.
- Learn to prepare complete feed for poultry using local ingredients.
- Share difficulties with other farmers to benefit from their experience.
- Regularly replace the rooster to avoid inbreeding.

Several key production and performance parameters for local chickens are important to know before starting local chicken farming initiatives (Table 1).

**Table 1.** Chicken production recommendations.

<b>Animal husbandry parameters</b>	<b>Average observed values</b>
Sex ratio	1 rooster for 5 to 10 hens
Stocking density	<ul style="list-style-type: none"><li>• 0 to 1 week: 50 birds per m<sup>2</sup></li><li>• 2 to 4 weeks: 15 to 20 birds per m<sup>2</sup></li><li>• 5 to 8 weeks: 10 to 15 birds per m<sup>2</sup></li><li>• 4 to 6 months: 6 to 8 birds per m<sup>2</sup></li><li>• Breeding hens and roosters: 3 to 5 birds per m<sup>2</sup></li></ul>
Number of laying cycles/year	4 to 5 with natural brooding and about 8 with artificial incubation
Duration of one laying cycle	15 days
Egg production per laying cycle	12 eggs on average/hen/laying cycle
Brooding duration	21 days
Hatching rate	70 to 85% in natural brooding and 80 to 95% in artificial incubation
Desirable mortality rate (0 to 6 months)	5 to 10%

Four keys are essential for success in local chicken farming: housing, feeding, reproduction and breed management, and hygiene/health. The rest of this *ECHO Technical Note* will cover these in detail.

## Housing

Chickens often spend nights in a coop that is too small, humid, and poorly ventilated. This leads to increased disease pressure and higher mortality among chickens. Parasites such as lice eventually drive the chickens out of the coop. These realities stall enterprise development. To improve poultry farming, chickens must be properly housed and provided with food and water.

Housing contributes significantly to the success of poultry farming because it protects birds against harsh weather (heat, cold, wind, rain, sun), theft, and predator attacks such as from snakes, cats, dogs, and birds of prey. It must be accompanied by appropriate equipment in both quantity and quality.

### Characteristics of a good poultry house (Figure 2)

The characteristics of a good poultry house are as follows:

- The length of the building should be oriented East to West, and its openings placed on the North and South sides.
- Dimensions and standards must be respected during construction depending on flock size (width: 6 to 12 m, length: 11 to 18 m, wall thickness: 20 to 40 cm depending on the materials used, roof height: 4 m along the central axis of the building and 2 m on the sides).<sup>①</sup>
- The poultry house must have good ventilation to allow the chickens to breathe properly and to dry out the base/floor to reduce water-borne diseases.
- The floor should be firm, laid on a good foundation of gravel and stones (compacted or concrete) or on well-compacted earth to facilitate cleaning. The floor should be covered with dry, brown bedding (straw, wood shavings, peanut shells, rice husks, etc.) 10 to 15 cm deep. Renew bedding material periodically.
- The inside walls of the poultry house should be plastered so parasites cannot hide in holes.
- The poultry house must be equipped with a footbath (a small basin containing disinfectant) installed at the entrance. This device helps protect chickens against germs carried by visitors.
- The breeder must protect the poultry house against theft. A lockable door, a wire-mesh-covered window, or locating the building where it can easily be monitored are possible solutions.
- The poultry house should have a yard with shade inside (trees) to allow chickens to rest when it is hot.



**Figure 2.** Chicken coop with courtyard.  
Source: ECHO West Africa

<sup>①</sup> These dimensions are for large operation. A smaller flock with brooding hens and rooster(s) of about 30 total birds would need about 2 m by 4 m enclosure (8m<sup>2</sup> area with 5 chickens per m<sup>2</sup>). The farmer is free to build the coop according to their budget or the size of their flock. The coop can be rectangular, circular or any other shape. The materials used can include cement, adobe, wood, etc. The roof can be made of sheet metal, straw, clay, etc. You can find example diagrams of alternative chicken coops by Swartz and Elhardt (2023).



**Figure 3.** Examples of feeders. *Source:* ECHO West Africa

- To protect from burrowing predators, the bottom boarder at the base of the housing should be solid (brick, block, etc.). Some designs include wire mesh at the base that can be buried and extend from the housing to discourage burrowing predators.

### Equipment for semi-intensive poultry production

In addition to a suitable layout of the poultry building, some equipment is required. This includes feeding and watering equipment, heating systems for young chicks, perches and nesting boxes, and a sprayer for disinfection.

#### Feeding and watering equipment



**Figure 4.** Example of waterers. *Source:* Napatsorn Leerasantadkul

Feeders come in various types (Figure 3), and sizes that correspond to the age of the chickens (chicks, pullets, and adults) to facilitate efficient feed use. They can be trays, linear, or hopper-type.

Provide poultry with a constant supply of drinking water. Chickens regularly seek water, especially when it is hot and dry, and can consume up to 0.5 L in one day. A lack of water leads to a rapid and lasting drop in production in adults and dehydration with eventual death in young birds. Waterers also come in various types and sizes that correspond to the age of the chickens (Figure 4).

#### Heating systems

During cold periods, chickens may need additional heaters. Heat is especially important for young chicks. For very young chicks, brooder boxes can be used with heat lamps. Stoves (charcoal) and radiators (electric or gas) warm the inside of the chicken coop (Figure 5).



**Figure 5.** Example of heat source. *Source:* ECHO Staff



**Figure 6.** Example of a brooder. *Source:* Napatsorn Leerasantadkul



**Figure 7.** Perch. *Source:* ECHO Staff

Brooders (Figure 6) are box-shaped cages used to raise chicks during the first three weeks of life. The brooder consists of a box with a heat lamp. This may also be subdivided into two compartments, with one side covered to create a slightly higher temperature than in the other. One brooder is needed for 100 to 200 chicks, at a rate of 100 birds per m<sup>2</sup>.

#### Perching and nesting boxes

Perches (Figure 7) allow chickens to rest at a height, while nesting boxes (Figure 8) facilitate



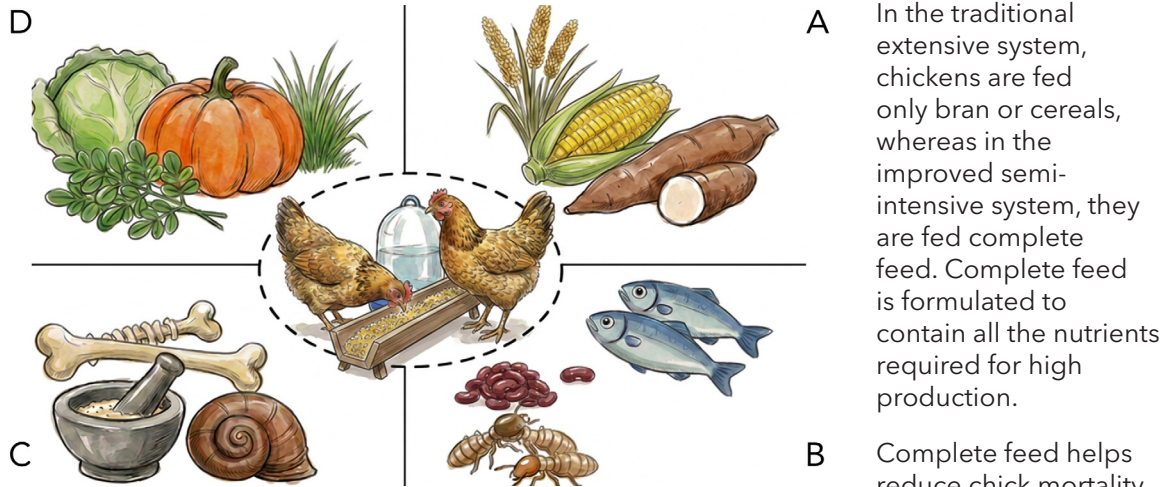
**Figure 8.** Nesting boxes. *Source:* ECHO Staff

easy egg collection. The number of nesting boxes should be at least equal to half the number of breeding hens.

### Sprayer

A handheld or backpack sprayer is essential for the periodic disinfection of premises and equipment. It must be carefully cleaned and left to dry after each use.

## Feeding (Figure 9)



**Figure 9.** Types of foods: A: food high in energy (maize, cassava, millet), B: foods high in protein (fish, beans, peanuts, termites), C: foods high in minerals (shells, bones), D: foods high in vitamins (leafy greens, vegetables). Source: Stacy Swartz/Canva Magic Media, Canva Inc., June, 2026

**A** In the traditional extensive system, chickens are fed only bran or cereals, whereas in the improved semi-intensive system, they are fed complete feed. Complete feed is formulated to contain all the nutrients required for high production.

**B** Complete feed helps reduce chick mortality and significantly increases the growth of young birds (He and Li, 2025). Farmers can use local ingredients to prepare complete

feeds at lower cost for daily use in their poultry enterprise.

### Feed formulation (Table 2)

Poultry need water, energy (cereals, legumes, etc.), proteins (fish, termites, maggots, etc.), minerals (bones and shells), and vitamins (green forage).

Feed supplements help improve the feed of hens with more minerals and vitamins. Also, depending on resources, you can use industrial concentrates to enrich poultry feed. The amount of concentrate to use depends on the type of concentrate and the formula desired (starter, growth, finishing, etc.). To reduce the cost of commercial feed, mix 30 to 40% of industrial concentrate with 60 to

**Table 2.** Based on ECHO's experience, feed ration recipes for preparing 10 kg of feed, based on the age of the chickens.

Ingredients	Chicks (up to 8 weeks old)	Pullets	Adults	Layers
Crushed cereals (yellow maize and millet)	6.5 kg	6 kg	5.5 kg	5.5 kg
Groundnut cake or soybean or cowpea	2 kg	1.5 kg	0.5 kg	0.5 kg
Powdered dried moringa or cassava leaves	0.5 kg	0.5 kg	1 kg	1 kg
Fish meal, blood meal, or dried termites	1 kg	0.5 kg	1 kg	1 kg
Wheat, rice, maize, or millet bran, or roasted then crushed cassava tubers	0 kg	1.5 kg	2 kg	2 kg
Feed supplement	Mineral mix; green leafy plants, termites, caterpillars, maggots			

**Table 3.** recipe to make 1kg of mineral mix. Give young birds 0.5 kg per 100 kg of poultry feed (0.5%) and mature birds 1 kg per 100 kg of feed (1%).

Ingredients	Quantity
Crushed oyster, snail, or eggshells	400 g
Crushed calcined bones	350 g
Crushed charcoal	200 g
Table salt	50 g

70% of local ingredients (corn, bran, oil cakes, etc.). You can make homemade mineral mixes to enrich poultry feed (Table 3).

### Distribution of feed to poultry

Feed chickens twice a day. Give half the ration early in the morning and the other half in the afternoon. Chickens should eat well before sleeping, so they can digest properly at night. At one

week old, feed chickens about 15 g of feed per chicken per day. Each additional week, increase feed by 5 g per chicken until chickens are 24 weeks old (130 g per chicken). After 6 months of age, continue feeding about 130 g feed per chicken per day. Eating behaviors may change based on heat, disease pressure, or stress. Monitor flock health and adjust feeding in response to behavioral changes.

### Termite and maggot production techniques

Like meat for humans, termites, insects, and worms help chickens grow well and lay eggs. They are very rich in protein and inexpensive in improved traditional systems. They serve as a dietary supplement. We recommend giving maggots or termites to chicks the first 6 weeks of life because they need protein-rich food the most at early growth stages.

#### Techniques farmers use for collecting termites to feed to chicks (Figure 10)

##### Technique 1: Attract with dung and straw

Collect, mix, and place cow dung and straw in a jar. Water the mixture and turn the jar over on sandy ground. After two days, early in the morning, turn the jar over and you should see termites that you can feed to chicks. If not, water the mixture again, turn the jar back over, and check again in 2 days.

##### Technique 2: Attract near the termite mound with grass

Fill a clay pot with cow dung or finely chopped grass stems, then water the contents and turn the pot over near a termite mound whose entrance has been probed. Protect the overturned pot from the sun with straw. Termites attracted to the decomposing elements enter the overturned container. Turn over the contents and distribute them to the chicks

##### Technique 3: Attract near the termite mound with manure

Put sheep droppings or cow dung in a clay pot, wet with water, and turn the jar over a termite opening. Then cover the clay pot with a wet jute bag to maintain humidity and place a stone on top so that the wind does not blow the bag away. Feed the fresh termites mixed with the residues; the chickens will sort and consume what they are interested in. ②

#### Techniques farmers use to collect maggots

These exemplify various ways by which farmers attract the maggots, facilitate egg laying, and then collect the maggots.

**Technique 1:** Put brewers' grains and the carcasses of



**Figure 10.** Feeding termites to chickens. Source: ECHO West Africa

② Some termite species are dangerous for chicks but not guinea fowl or ducks, specifically *Noditermes* and *Cubitermes* species (Boafo *et al.*, 2019).

small animals (mice, geckos, etc.) or the contents of animal stomachs into a container. Add a little water and stir the mixture to blend it, then leave the jar to rest in the shade. Flies will come to lay eggs in the jar, and those eggs will hatch into maggots.

**Technique 2:** Mix blood, offal, and cow dung in a large open pot filled one-third with water. Flies will lay eggs in this mixture, and the maggots that hatch will feed on it. Leave the pot open during the day and closed at night. After 5 to 10 days (depending on the temperature), before the maggots pupate, they are collected by gently pouring out the water from the pot. The maggots will float, and after washing them, they are ready to be fed to chickens. It is advisable to place the pot far from public squares, as the smell could be disturbing.

**Technique 3:** In a container, mix 1 to 1.5 kg of wet corn bran or a mixture of 0.5 kg of corn bran and 0.5 kg of soybean bran, or 1 kg of soybean bran, or other locally available substrates. Inoculate the substrate by adding 200 ml (about two ladles) of crushed fish viscera (or any other material that can attract flies) in water and then mix. Expose the setup in the shade away from dwellings (under a tree, a shed, in an abandoned building, etc.). Let the flies lay eggs there and monitor daily production by checking the contents. Cover the setup with mosquito nets to protect the larvae against predators (lizards and wild birds). Harvest the larvae or maggots after 4 days.

**Technique 4:** Use corn bran (or sorghum or soybean bran) or animal manure as a medium for the development of fly larvae. Add fish entrails or carcasses of small animals to attract flies. Make a mixture in an empty 20- or 25-L drum cut lengthwise or any other plastic container or used jar. After 3 to 4 days, pour the substrate containing the larvae into a sieve with 2 mm mesh diameter placed over a container, then expose the whole setup to the sun. The maggots, fleeing the light and seeking to migrate to the bottom of the dark substrate, fall into the container through the holes of the sieve.

**Technique 5:** Put sheep droppings or cow dung in a clay pot, moisten with water, add fish or poultry intestines, then leave in the open air so that flies come on top. After 3-4 days, use a 4 mm mesh sieve to separate the larvae from the substrate. Feed the fresh larvae or dry them in the sun to preserve them for 1 or 2 years.

When collected with any of these methods, you can use larvae fresh, dried, or ground into meal to feed chickens.

## Reproduction

Reproduction management and flock genetics are essential elements of successful poultry farming.

### Making good selections

When buying hens and roosters for breeding, determine whether the animals can thrive where the farm is located, considering whether the breed can withstand heat, humidity, food scarcity, and disease pressures of the context. In general, market situation, breeder experience, farm management, socio-cultural dimension, local preferences, and the availability of chickens factor into the choice of a chicken breed.



**Figure 11.** Example of a healthy rooster (top) and hen (bottom).  
Source: ECHO Staff

Select roosters by visual assessment. Roosters should be in good health, with alert eyes, thick glossy feathers, and an upright, bright red comb (Figure 11). Good eyesight is important. Avoid roosters that do not walk well or that have crooked toes. Avoid roosters that have blisters on their chest or other defects that may prevent them from mounting hens normally. Choose a hen that also appears visually healthy. Productive hens should not too old as their productivity starts to decline at around two years old. They should lay large, clean eggs with hard shells.

Good roosters and good hens are most often found with good breeders who regularly vaccinate their hens and take good care of them. You can import exotic roosters to cross with local hens. The resulting crossbred chicks will be smaller than the exotic rooster but have locally adapted hardy traits from the hen. Once grown, they should be separated for fattening and sale or consumption to avoid inbreeding



**Figure 12.** Incubator  
Source: Napatsorn Leerasantadkul

### Manage reproduction properly

For greater efficiency in feeding and reproduction management, separate adults, pullets, broody hens, and chicks. A male must not fertilize his mother, his offspring, or the offspring of his parents, because chicks born from such matings will be smaller and less resistant to disease. Change breeding roosters once a year, or at most once every two years.

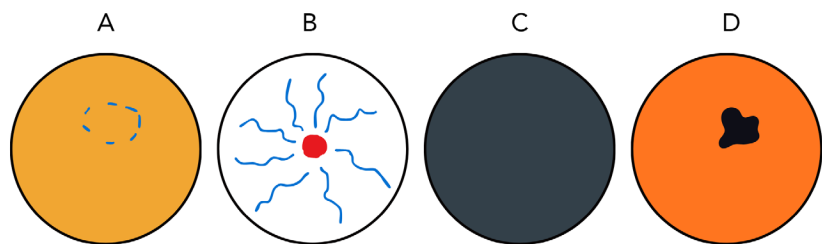
### Types of incubation

There are two types of incubation: natural incubation (hen; Figure 8) and artificial incubation (incubator equipped with a hatcher; Figure 12).

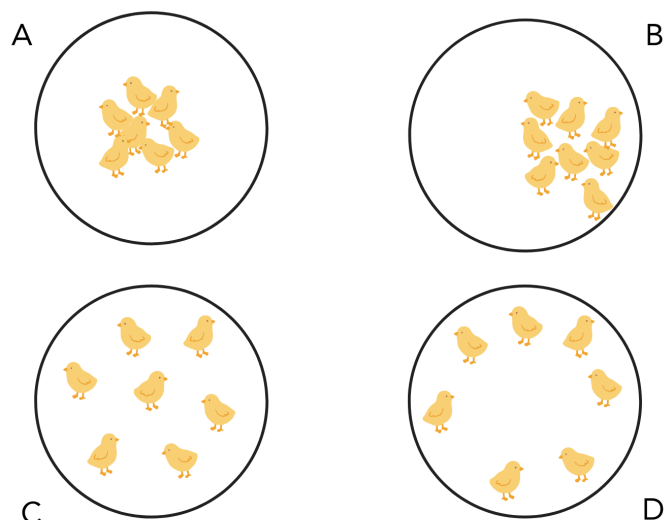
Eggs selected for incubation must be fertilized, fresh (7-8 days old), clean, and neither too large nor too small. Avoid dirty, rotten, cracked, broken, infertile, or malformed eggs. To detect fertilized eggs, candle them on the 7th day with sunlight or a flashlight (Figure 13).

### Chick brooding and start-up

Cold is the main cause of chick mortality. Chicks need care and attention to ensure that they are not too cold or too hot. Chick behavior indicates whether or not the temperature is suitable (Figure 14). From the day of hatching or arrival, count chicks daily, give them feeders and drinkers, and keep them warm for 21 to 28 days, depending on the intensity of the cold (Table 4).



**Figure 13.** Potential egg appearances on day 7 of incubation. A: Unfertilized egg (not viable) B: Early Development (viable) C: Late Development or dead embryo (not viable) D: Blood spot (not viable).  
Source: Stacy Swartz/Canva Magic Media, Canva Inc., May, 2026



**Figure 14.** Temperature indication based on chick behavior. A: Too cold B: Presence of a draft C: Good temperature D: Too hot. Source: Stacy Swartz/Canva Magic Media, Canva Inc., May, 2026

Chicks that are with the mother hen do not need heating because the temperature under the hen's wing is about 37°C (Figure 15).

**Table 4.** Recommended temperature based on chick age.

Age in weeks	Temperature requirement
1st week	33-34°C
2nd week	32-33°C
3rd week	30-32°C
4th week	28-30°C
Beyond	16-28°C

## Health and hygiene

For better productivity in poultry farming, combine good feeding with hygiene and veterinary care. Without this, diseases will hinder poultry production. Good hygiene contributes to the comfort and well-being of poultry. Above all, it helps prevent many diseases.

Key points to consider for maintenance of hygiene include:

- Quarantine of new animals for 14 days before introduction to the flock/ poultry housing.
- Isolation and treatment of sick animals.
- Management of carcasses, litter, and other products.
- Cleanliness and good discipline of poultry keepers.



**Figure 15.** Hen sheltering her chicks under her wings. Source: ECHO West Africa

## Distribution of feed and water

Store feed in a ventilated building on wooden pallets to prevent mold. Proper feed distribution helps avoid parasite infestation and ingestion of pathogens. Serve the food as chickens need it in order to avoid waste and long stays in the feeders, which could lead to feed spoilage.

## Cleanliness and disinfection of buildings

Keep the environment around the building clean, properly ventilate, remove litter, place a footbath at the entrance, store manure in a manure pit, and dispose of carcasses safely by burning or deep burial.

Key points to consider for disinfection of buildings include:

- Keep the building environment clean.
- Properly ventilate the building.
- Install and periodically renew the bedding.
- Continual operation of footbaths at the entrance of the building. Bleach or other disinfectants are commonly used.
- Store manure in a manure pit.
- Burn carcasses or bury them deeply after covering them with quicklime.

## Cleanliness of feeders and drinkers

Feeders and drinkers must be cleaned regularly and disinfected with a suitable disinfectant such as bleach.

Key points to consider for disinfection of feeders and drinkers include:

- Give poultry drinking water in clean drinkers.
- Distribute healthy food in clean feeders (not the ground).
  - Avoid giving rancid or soiled food to poultry.
- Clean and disinfect the premises (floor, walls) after each flock has passed.

- Immediately remove the poultry carcasses from the premises by burial or incineration.
- Periodically disinfect the runways.
- Systematically disinfect the premises and runways after each outbreak of disease.

### Cleanliness and discipline among poultry keepers

Biosecurity is the set of farm management practices that prevent the introduction and spread of disease. These include controls such as:


- Prohibit access to the breeding building for unauthorized persons.
- Group the poultry by age range if possible.
- Avoid stressing the animals (variations in feeding and drinking times, interruptions in water supply, bright lights during the night, noise, sudden changes in behavior towards the animals, etc.)
- Feed the poultry from youngest to adults and from healthy to sick birds to limit the transmission of germs.
- Wear clean clothing for farm work. Dip feet in a footbath before any entry into the building.
- Wash with soap after any contact with animals from other farms before entering the farm.
- Carry out a complete clean of animals housing after each outbreak of contagious disease.

### General Symptoms Observed in Sick Poultry


Daily animal monitoring enables early detection of disease signs, adaptation of treatments, and prevention of epidemics. It is important, therefore, for you to recognize a sick bird in the flock. Diagnosis is relatively easy. Some behaviors you will observe of a sick hen include:

- At rest: she is drowsy, sad, and/or listless.
- In motion: she hesitates to move, her gait is sluggish, unsteady, with limping, staggering, or disorganized movements.
- With respect to appetite: she eats little or does not eat at all.
- With respect to general appearance: feathers are ruffled and unkempt, tremors, nasal, oral, and ocular (eye) discharge.

Examine the body and mucous membranes (nasal, ocular, oral, and anal) of the chicken. This is a good way to detect:

- Skin issues: lice, fleas, ticks, cyanosis of the comb and wattles (dark to purple appearance).
- Respiratory issues: nasal discharge, coughing, rattling (noisy breathing).
- Eye issues: conjunctivitis and other eye lesions.
- Digestive issues: diarrhea which can have yellow, green or black color, be bloody, or foul-smelling.
- Nervous system issues: nervous disorders (loss of coordination of movements, torticollis,  falls).

If possible, a veterinary or similar community animal health specialist should visit the poultry operation once every two weeks.

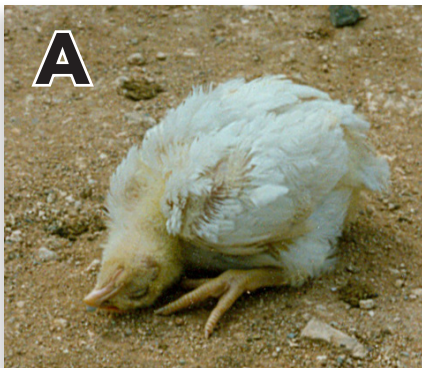
 Torticollis in poultry is also called wry neck and looks like involuntary twisting or tilting head movements. It is caused by neurological issues, trauma, infections, poor genetics, or nutritional deficiencies. Torticollis often coincides with difficulty walking, general lack of movement, and poor balance.

## Major Poultry Diseases (Table 5)

Vaccinating chicks from the first days is essential to protect them against common infectious diseases such as Newcastle disease (Figure 16a), avian pox (Figure 16b), or infectious bronchitis. Additionally, you can prevent and/or treat many poultry diseases through plant-based remedies described below.

**Table 5.** The most common viral, bacterial, and parasitic diseases in poultry farming along with common symptoms, treatments, and prevention mechanisms.

Disease	Affected poultry	Symptoms / Lesions	Treatment	Prevention
<b>Viral Diseases</b>				
Newcastle Disease (Avian Pseudoplague)	Chickens, turkeys, rarely guinea fowl	Peracute: sudden death (90-95%), few symptoms	None	Vaccination
Gumboro Disease	Chicks (3-6 weeks)	Ruffled feathers, weakness, whitish diarrhea, high mortality, growth remains stunted	Antibiotics (to treat secondary infections) + kidney-protective drugs	Vaccination
Avian Pox	Chickens, guinea fowl, turkeys, pigeons	Scabs on beak, comb, eyes, wattles	Ointment + antibiotics (to treat secondary infections)	Vaccination
<b>Bacterial Diseases</b>				
Pasteurellosis (Avian Cholera)	All poultry (ducks most sensitive)	Acute: rare in young birds Subacute: green foul diarrhea, sneezing, bluish comb/wattles	Antibiotics	Vaccination
Salmonellosis	All poultry	Chicks: sticky yellow diarrhea, high mortality Adults: gray-yellow diarrhea, weakness, thirst	Antibiotics, vitamins, amino acids, minerals	Vaccination
<b>Parasitic Diseases</b>				
Coccidiosis (Figure 16c)	All poultry	Weakness, weight loss, bloody diarrhea, anemia; intestinal blood clots	Anticoccidial drugs	Biosecurity, regular disinfection of coops, feeders, and waterers
Internal Parasites	All poultry	Weakness, weight loss, diarrhea/constipation, anemia	Dewormers	Keep litter dry and/or replace when it gets wet
External Parasites	All poultry	–	Sprays/powders applied to birds and housing	Avoid overcrowding



**Figure 16.** Examples of viral (A: Newcastle disease and B: Avian Pox) and parasitic (C: Coccidiosis) poultry diseases. Sources: Lucien Mahin (A: [GNU Free Documentation License](#) and C: [CC SA](#)), Roman Halouzka (B: [GNU](#))

## Natural remedies against diseases

Several plants are traditionally used in poultry production, including moringa, African mahogany, vernonia, neem, garlic, amaranth, nettles, eucalyptus, thyme, lemongrass, basil, mint, ginger, baobab, and combinations of these plants. They are used in preventive or curative ways for respiratory diseases, digestive problems, deworming, immune support, and general bird health.

### **Moringa (*Moringa oleifera*)**

Moringa is a very effective plant for the prevention and treatment of diseases. Moringa leaves are a nutrient-rich supplement that provide protein, vitamins, minerals, and antioxidants. When included at low levels in poultry feed (up to around 5% of diet), they support growth, egg quality, and general health, and help birds cope with stress or toxin exposure. However, moringa does not replace vaccination or veterinary treatment, and high inclusion rates can reduce feed intake and performance (Mahfuz and Piao, 2019).

The fresh leaves are harvested from the trees, then sorted, washed, and dried in shade. To obtain moringa powder, grind dried leaves finely. Dry the same day. Put moringa powder in the poultry's water every day. Ensure that the animals eat well (especially chicks) before drinking moringa water. We recommend 30 ml (2 tablespoons) of moringa powder per 1 L of drinking water, to be renewed up to three times per week.

### **African mahogany (*Khaya senegalensis*)**

The bark of *Khaya senegalensis* has some evidence of effectiveness against internal parasites in sheep (Ademola *et al.*, 2004). This has been backed up by practical experience in raising poultry. Clean and soak African mahogany bark in water for three days, and then give the solution once or twice a week to poultry as a preventive measure. For monthly deworming, boil the bark in water and serve it to chickens after it is fully cooled. Allow the chickens to become thirsty before providing it because the solution is very bitter.

### **Vernonia (*Vernonia amygdalina*)**

Vernonia leaves have antibiotic properties that help fight bacteria (Tobia and Ohimain, 2024). To prepare an oral treatment, crush leaves in clean water. Then allow the chickens to become thirsty before giving it to them because Vernonia is a very bitter plant, and the birds need to be thirsty to encourage consumption. We recommend offering it once a month as a preventative health practice. To treat external infections such as scabies, for example, mix Vernonia leaves with potash, salt, and palm oil. Then scrape the affected areas with a stone across the body before applying the solution over the wounds.

### **Neem (*Azadirachta indica*)**

Neem has been used for millennia in a traditional Hindu medicine. Modern research has confirmed its numerous healing properties for humans, animals, and plants. Neem leaves and seeds contain natural substances that are antiparasitic (Saha *et al.*, 2015; Abdel-Ghaffar *et al.*, 2008), antibacterial and anti-inflammatory (Hegazy *et al.*, 2024), and they also provide some antioxidants that support the bird's health (Torun Kumar *et al.*, 2020). Neem eaten or drunk by poultry can help reduce internal worms and support gut and respiratory health. Neem sprayed onto birds can help control certain external parasites such as poultry red mite.

To prepare a liquid solution of neem, crush 1 kg of neem leaves, then mix 5 L of water and let the mixture sit before straining (Figure 17). Give the resulting preparation as drinking water for 5 consecutive days to your chickens. It is not recommended to keep the solution for more than 24 hours. For this reason, crush only the amount needed for daily use. Alternatively, mix 1 kg crushed neem leaves directly with 10 kg of feed and serve it to the chickens. Another tip is to boil a handful of neem leaves in 1 L of water, let it cool to lukewarm, and give it to poultry for 2 to 3 days to treat intestinal worms.

### **Garlic (*Allium sativum*)**

Garlic is a traditional medicinal plant widely used in village poultry. When given in small amounts in feed or drinking water, it can support digestion, improve growth and feed conversion, and help reduce harmful bacteria in the gut (Abd El-Ghany, 2024; PoultryDVM, 2026). Research also shows that garlic has antiviral and immune stimulating properties and can help birds cope with some infections (Adjei-Mensah, 2023). Garlic extracts can also help repel or reduce external parasites such as red mite when used in sprays.

Give poultry garlic infused water at least once a month as a preventative health practice. Mixing garlic with drinking water ensures that all the poultry consume it in a satisfactory dose. For prevention of respiratory diseases, mix 1 crushed clove of garlic with 1 L of water and give it to the poultry to drink.

### **Amaranth (*Amaranthus* spp.)**

Amaranth promotes good development of chicks and excellent condition of adults. It is rich in proteins, minerals, vitamins, and trace elements.

### **Wild Nettle (*Laportea aestuans*)**

Nettle is an excellent remedy for fighting internal infections. The plants are rich in iron, calcium, magnesium, potassium, as well as vitamins A and C. They strengthen the immune system of poultry and help them stay healthy.

### **Eucalyptus (*Eucalyptus globulus*)**

Eucalyptus (*Eucalyptus globulus*) leaves contain essential oils with antibacterial and anti-inflammatory properties (El Shiekh *et al.*, 2025). In village poultry systems, you can offer a light infusion of eucalyptus leaves occasionally as a preventative and supportive remedy for birds with respiratory illness. Infuse a handful of eucalyptus leaves in 1 L of hot water then let it cool before giving to poultry to drink.

### **Thyme (*Thymus vulgaris*)**

Thyme is an aromatic herb. Thyme leaves contain compounds with strong antibacterial, antifungal, antioxidant, and mild anti-inflammatory properties. In poultry, thyme extracts and essential oils have been shown to reduce some harmful bacteria, support antioxidant status, and help birds cope with heat



**Figure 17.** Crushing neem leaves (top) and neem leaves in water (bottom).  
Source: ECHO Staff

stress and diseases (Saied *et al.*, 2025). You can use small amounts of thyme as a supportive remedy for digestive issues, mild respiratory problems, and as a general tonic.

Feed fresh, dry, or boiled thyme to poultry at least once a month as a preventive measure or to treat bacterial, viral, or respiratory disease symptoms. As a lotion, it can be used to clean wounds and injuries. To prepare, bring a large handful of fresh thyme to a boil in 250 ml of water. Let it cool before mixing with feed at the rate of 30 ml (2 tablespoons) per hen per day for 4 to 5 days.

### **Garlic (*Allium sativum*) and onion (*Allium cepa*)**

Use this recipe for viral infections. Gather 1 kg of onions and 3 to 4 heads of garlic. Cut the onions and garlic without peeling them. Put them in a container (that you have a lid for), add 5 L of water, and let the contents macerate (soften) with the lid on until there is no more fizzing. To speed up the fermentation process, add a little sugar. This fermentation process lasts about 15 days, and then we collect the solution (removing solids) and add 30 to 45 ml (2 to 3 tablespoons) of this preparation per liter of water for the poultry.

### **Garlic (*Allium sativum*), ginger (*Zingiber officinale*), and lemon (*Citrus limon*)**

In 1 L of water, mix 1 clove of garlic and a small piece of crushed ginger plus the juice of half lemon to help fight respiratory diseases, particularly Newcastle disease.



### **Lemongrass (*Cymbopogon citratus*) or basil (*Ocimum basilicum*)**

A hot infusion of a handful of lemongrass or basil leaves in 1 L of water, then cooled to lukewarm and given to poultry to drink, helps to fight respiratory diseases (Figure 18).

### **Mint (*Mentha* spp.), ginger (*Zingiber officinale*), or baobab (*Adansonia digitata*)**

Boil a handful of mint, ginger, or baobab leaves in 1 L of water for a short time, then cool to lukewarm and give to poultry to drink. This recipe aims to help fight respiratory diseases.



### **Five tree species combination**

Faidherbia (*Acacia albida*), African mahogany (*Khaya senegalensis*), desert date (*Balanites aegyptiaca*), shea (*Vitellaria paradoxa*), and neem (*Azadirachta indica*) are plants individually recognized as preventive and curative remedies for several poultry diseases, but when combined, they are even more effective because they have a broader spectrum of action.

Take 1 kg of bark from each of the five species and put them in a pot with a capacity of at least 25 L. Add 15 L of water and mark the water level on the pot. Then add another 5 L of water and bring the mixture to a boil. When the water boils and reduces (via evaporation) to reach the marked level, remove the pot and let it cool. The solution can be stored in a container and used for up to 3 months. For prevention, mix

**Figure 18.** Basil (top) and lemongrass (bottom) infusions.  
Source: Stacy Swartz

1 L of the solution with 5 L of water and give it to the poultry for 3 consecutive days, then repeat the procedure once a month for 3 consecutive months. For curative use, mix 1 L of the solution with 5 L of water and give it to the poultry for 3 consecutive days, then repeat the procedure once a week for 3 consecutive weeks.

**Table 6.** Summary of traditional and improved management systems on a per-hen basis.

	Traditional management		Improved management	
Number of eggs produced per year	36		60	
Number of eggs brooded per year	30		30	
Number of chicks hatched (8 out of 10 brooded eggs)	24		24	
Number of chickens raised and ready for sale	6		18 <sup>4</sup>	
Value of surplus eggs (100 FCFA/egg)	600 FCFA	0.98 USD	3,000 FCFA	4.89 USD
Value of birds produced (3,000 FCFA/head)	18,000 FCFA	29.32 USD	54,000 FCFA	87.97 USD
Sales revenue (eggs + chickens)	18,600 FCFA	30.30 USD	57,000 FCFA	92.86 USD
Feed costs	0 FCFA	0 USD	10,500 FCFA	17.11 USD
Other costs (vaccines, medicines)	0 FCFA	0 USD	3,000 FCFA	4.89 USD
<b>Total costs</b>	0 FCFA	0 USD	13,500 FCFA	21.99 USD
<b>Annual profit</b>	18,600 FCFA	30.30 USD	43,500 FCFA	70.87 USD

## Comparative case study of the two local poultry production systems (Table 6)

With a well-kept record, you can determine whether the poultry enterprise is profitable or not. Table 6 compares profits achieved with traditional and improved management practices.

The comparison in this context demonstrates that improved management of local chicken farming can be more profitable than traditional management. By investing in feed and veterinary care, the farmer increased productivity (by %167), reduced mortality, and improved income (by roughly %230 times).

<sup>4</sup> Although the number of hatched chicks is identical (24), three times more chickens are raised up to sale under improved management (18 compared to 6). This reflects better chick and chicken survival, due to appropriate feeding and veterinary care, as well as reduced predator pressure.

## Conclusion

Successful local chicken farming in West Africa depends on a combination of traditional know-how and modern practices adapted to the local context. As shown by comparisons between traditional and improved management, adopting simple yet effective techniques such as improved feeding, vaccination, health monitoring, and record-keeping can significantly increase productivity and income.

Local chickens, well-adapted to climatic conditions and available resources, represent a valuable opportunity to strengthen food security, improve livelihoods, and empower rural families. By investing in rigorous management and promoting good practices, each farmer can transform this activity into a sustainable source of benefits.

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### Further Resources

For more information on small-scale poultry production, see the following guides for further reading:

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Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). Poultry Training Manual for Extension Workers in Uganda: Transforming Livelihoods through Sustainable Poultry Production. Kampala, Uganda: MAAIF, 2019. <http://edn.link/mjtgrp>

Yami, A., W. Esatu, E. Rege, Hoa Hoang, Ngo Thi Kim Cuc, Sothyra Tum, Chhay Ty, and T. Dessie. Smallholder Chicken Production Manual: A Farmers' Training and Reference Manual to Inform Day-to-Day Production Decisions. ILRI Manual 74. Nairobi, Kenya: International Livestock Research Institute (ILRI), 2024. <http://edn.link/gqcjdj>

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