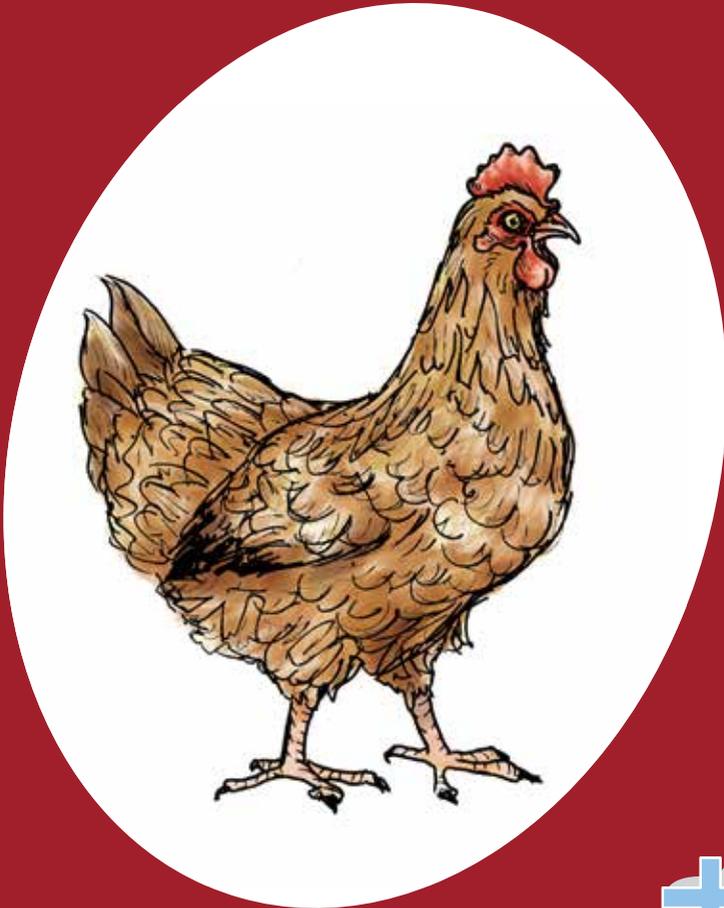


Practical village chicken production



TRAINING MANUAL

By M M Chibinga



Brethren in
Christ Church

Practical village chicken production

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Brethren in Christ Church Zambia has had a dedicated community development arm since 1993. The aim of this ministry is to facilitate communities in realising secure livelihoods characterised by adequate food, clean potable water supplies, improved hygiene and sanitation, stable incomes, positive gender relations, and a response to HIV.

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1

INTRODUCTION

Village chickens are the most common type of livestock in many rural areas. In countries such as Zambia, even very poor households with few labour resources will normally keep some chickens. Village chickens are also known as rural, indigenous, scavenging, free-range, traditional or family chickens, and have various names in local languages.

THE IMPORTANCE OF VILLAGE CHICKEN PRODUCTION

Village chickens are an important part of local food production and are relatively easy to keep:

- The chickens and their eggs are a source of protein for children and adults.
- They are widely eaten at important local events (weddings, funerals, church meetings and other social gatherings).
- Very small amounts of capital are needed to start production.
- Little labour is required.
- Little feeding is required.
- Chicken housing is simple.
- Both chickens and eggs are very easy to sell.
- Feathers can be used to make hats and other traditional decorations.

A simple mobile chicken house



Illustration: © Agromisa Foundation and CTA

2

CATEGORIES OF VILLAGE CHICKENS IN ZAMBIA

To ensure good and appropriate management of village chickens, it should be recognised that the flock can be divided into four different groups:

- chickens less than seven weeks old
- growing chickens
- breeding hens and cocks
- culled birds.

These groups require different types of management and feeding.

Chickens less than seven weeks old

- Newly hatched chicks require a very warm environment until they are feathered.
- The brooding period is four weeks in the hot season and six weeks in the cold season. However, the period can be reduced by up to one week by weaning the chicks from the mother at one week old, giving them a high-protein diet, making sure that they are protected from predators and keeping them in a warm building.
- Chicks less than six to eight weeks old need a high-protein diet and protection from predators.

Growing chickens

- These are chickens between the ages of 6 and 20 weeks.
- Chicks may graduate to become 'growing chickens' at 6 to 8 weeks depending on how quickly they grow and how healthy and strong the birds are.

Breeding hens and cocks

- This group is made up of sexually mature birds more than 20 weeks old.
- Laying hens require calcium-rich feed and nest boxes in which to lay their eggs.

Culled birds

- These are birds that are not good enough to be growing or breeding stock and are therefore separated to be slaughtered.
- They need only enough feed to sustain them until they are culled.

3

FACTORS LEADING TO LOW PRODUCTIVITY IN VILLAGE CHICKENS

A number of factors can lead to low productivity in village chickens, including the following:

- poor disease control and treatment methods
- poor nutrition
- in-breeding
- chickens being left to brood chicks for too long
- the lack of a good plan for production and sales, which can make farmers feel their chickens are not profitable
- poor or no housing: if chickens have to find their own place to spend the night, they often choose trees, which exposes them to predators and thieves. Pests are a threat if enclosures are dirty.



Providing proper housing for chickens can help to protect them from thieves.

Illustration: Pera Nöhr-Rouendaal. Where there is no artist (second edition)

4

HOW TO SOURCE CHICKENS FOR BREEDING

Breeding is the mating of chickens of different sexes, a process that leads to chicks being hatched. When you are purchasing male and female chickens for breeding, consider these points:

- Chickens should be free from disease and pests.
- Chickens should have good laying, hatching and brooding characteristics (see section 5).
- The birds should have good selling qualities.
- It is advisable to buy your birds at the end of the rainy season when they are in good condition due to the abundance of good food.
- It is a good idea to consider buying chickens when they are cheap so you can make more profit.
- It is important to put the birds in comfortable cages and provide them with food and water while transporting them.



Illustration: www.wingfinger.co.uk

5

HOW TO SELECT BIRDS FOR BREEDING AND BROODING

- Birds selected for breeding should outperform other birds in the flock:
 - They should be fast-growing compared with birds of the same age.
 - They should have a higher live weight than other birds of the same age in the flock.
- Birds should show good early feathering as this will ensure that they are able to keep warm at an early age.
- They should have a good appearance with no signs of illness, disease or pests.
- The males should be known for their aggressiveness in chasing and courting females or should come from cocks that were aggressive.
- The females selected for laying eggs should be known to lay large clutches of at least 12 or more eggs, or should have come from parent hens with large clutches.
- Those selected for brooding should be known to hatch high numbers successfully or for hatching all the eggs they sit on.
- Birds should be selected for brooding based on whether all or almost all of the chicks they hatch survive and grow, or on whether they come from hens which were good brooders.



Illustration: www.wingfinger.co.uk

6

BREEDING

There are basically two types of breeding:

- cross-breeding
- in-breeding

Cross-breeding is the mating of chickens that are not related. **In-breeding** is the mating of related chickens, eg a mother and son, father and daughter, or brother and sister. In-breeding causes problems: poor growth of chicks, susceptibility to disease, lameness etc.

To avoid in-breeding, change cocks every four to five months. This will ensure that the cocks do not breed with their daughters when they become sexually mature. The only sexually mature male in the flock should be a carefully selected cock.

Breeding and production facts

- Both sexes have a body weight of about 0.5kg at 10–12 weeks (although males are slightly heavier). Hens weigh no more than 1.2–1.5kg at the point of laying and a cock weighs 1.4–2.5kg at the age of maturity.
- Generally, hens will lay their first egg at the age of 22–30 weeks and lay 2 to 4 clutches of 5 to 20 eggs a year, depending on the season and, particularly, the availability of feed. The average weight of an egg is 40g (with a range of 27–65g).
- Hens often find dark, quiet places for laying eggs and brooding.
- Typically, about 8 chicks per clutch will hatch, with a range of between 4 and 15.
- Incubation takes 21 days and chicks will follow their mothers immediately after hatching.
- Only 20–50 per cent of chicks hatched will reach adulthood. Approximately 85 per cent of these losses occur in the first three weeks of life. Adult mortality is very variable and depends on specific local conditions and the occurrence of disease.

Timetable

- It takes 21 days for a village chicken to complete one laying cycle (12 eggs).
- Incubation takes 21 days.
- A hen will start laying 7 to 14 days after it stops taking care of chicks, regardless of the age of the chicks.

NOTE: More eggs and chicks can be produced if chicks are removed from the mother one to seven days after hatching. The period will depend on the farmer's capacity and ability to take care of the chicks.

A breeding timetable from Hamubbwatu Zone

Egg laying	21 days
Incubating	21 days
Brooding	7 days
Resting	10 days
Total number of days for the cycle	59 days

This means that the chicken can produce six clutches in a year as there are 365 days in a year. Under good management, around 15 chicks per clutch can survive. This means one hen can produce 90 chicks in a year.

7

EGG MANAGEMENT

Collection

- Collect eggs frequently, leaving at least one egg in a nest. This will prevent: egg eating, chickens becoming broody and laying fewer eggs, eggs becoming dirty.
- Dirty eggs should be cleaned carefully using a dry cloth.
- Washed eggs may not keep well so they are better sold immediately for consumption.
- Eggs should always be placed in trays with the large end pointing upwards, never the small end. This is because when an egg is stored with the pointed end up, the air sac on the broader part will be at the bottom. The sac will slowly rise and move towards the yolk, bringing any air and bacteria with it, and will spoil the egg.

Illustration: www.wingfinger.co.uk**Storage**

- If eggs are stored for more than four days, the room should be kept at a cooler temperature.
- The ability of eggs to hatch decreases the longer that they are stored.
- The moisture content of the atmosphere in the storage area should be kept high by placing trays of water near the eggs or by dampening the floor often. But avoid water collecting on the eggs.

Disinfecting eggs before hatching

- It is important to sanitise unhatched eggs to kill micro-organisms.
- Eggs can become contaminated as soon as they are laid.
- Micro-organisms can enter an egg through the tiny pores in its shell.
- Products for fumigating eggs are available from drug stores.
- Fumigation can also be done with locally available products such as pounded tobacco leaves.

Identifying infertile eggs

After 7–10 days of incubating, the eggs can be candled (this means using a light source to check the eggs' fertility). The infertile eggs can then be removed from the nest.

The candling process

Set up your candling equipment in a dark room near to the incubating nest. Pick an egg from the incubator and hold it above the light. The correct way to do this is as follows:

- Make sure that your hands are clean and dry. Oil from your fingers can clog the pores in the egg shell and stop the embryo from getting the oxygen it needs.
- Place the larger end of the egg (where the air sac is) directly against the light. Hold the egg near the top, between your thumb and forefingers. Tilt the egg slightly to one side and rotate until you get the best view. If you are having trouble viewing the egg contents, turn out some lights or go into a dark room/closet.
- As you work, you should mark each egg with a number using a pencil and take notes on your findings. That way, you can compare the results of the first candling with the results of your second candling.
- Try to work quickly, but not so fast that you risk dropping the eggs. As long as the eggs are returned to the incubator within 20 to 30 minutes, there is no risk of the candling process affecting their development. A mother hen will frequently leave her eggs for short periods of time while she is incubating them.
- Be aware that it will be more difficult to candle brown or speckled eggs, as the dark shells do not become as transparent under the light.



Illustration: www.wingfinger.co.uk

Normal development of eggs

- You may be able to start seeing something by day three – veins may start to be apparent.
- The best signs of progress are veins and blood vessels that continue to grow and spread.
- At about eight days, you can see the chick wiggling and kicking in its egg.
- As the hatch progresses, the air pocket in the egg should be getting larger. The egg will be getting darker as the bird grows and takes up more space.
- During the last three days of a hatch, it is best to avoid candling the eggs unless you have a specific reason to.

Signs of an egg gone bad

The following are all signs that an egg has gone bad:

- There is a vague ring inside the egg, and few or no veins.
- After 10 days, the egg is still clear.
- There is a very distinct blood spot with few or no veins.
- There is a lack of development compared to the rest of the eggs in the hatch. However, do not give up on the egg until you are certain that it is not developing. Some eggs may appear to be lagging behind, but it may just be the viewing angle or a number of other factors.

8

FEEDING

Chickens need adequate feed to maintain their condition (eg to move around, renew their feathers and fight diseases), to grow and to produce eggs. Their diet – like the diet of humans – consists of different nutrients: water, carbohydrates, proteins, fats, vitamins, minerals and crude fibre.

Functions and sources of nutrients in chicken feed

Nutrient	Function	Nutrient source
Carbohydrates	To provide energy (eg for movement) To maintain body temperature [Any surplus is stored as fat reserves (in lipid deposits) in the body]	<ul style="list-style-type: none"> • Maize grain • Maize meal (No 3 meal) • Sorghum • Millet • Cassava • Sweet potato meal
Fibre	To enhance digestion [Crude fibre is itself poorly digested]	<ul style="list-style-type: none"> • Maize grain • Maize bran • Wheat bran
Proteins	To replenish the body's muscles, organs and fluids To contribute to the growth of feathers, beak and claws To produce eggs	<ul style="list-style-type: none"> • Insects (ants, termites etc) • Maggots • Soya cake • Sunflower cake • Worms • Meat scraps • Fish scraps • Fish meal • Meat meal • Bone meal • Blood meal • Oil cakes from, for example, ground nuts and cotton seeds
Fats	To provide energy: fats are very high in energy To maintain body temperature [Surplus is stored in lipid deposits in the body]	<ul style="list-style-type: none"> • Rendered fats from beef or pork by-products • Vegetable oil

Nutrient	Function	Nutrient source
Minerals	To build bones To produce eggshells To assist in chemical reactions inside the body	<ul style="list-style-type: none"> • Bone meal • Crushed oyster shells • Snail shells • Burnt eggshells. Eggshells should always be scorched or cooked before reuse in chicken feed to remove any germs that might cause disease.
Vitamins	To maintain the body's functions To fight diseases	<ul style="list-style-type: none"> • Green grass • Vegetables • Fresh cow dung • Sunlight
Water	Essential for all body functions. Chickens need water for survival, growth, activity and egg production.	Five chickens will drink about 1 litre of water every day. They will need more than this when it is very hot. Water should be available at all times.

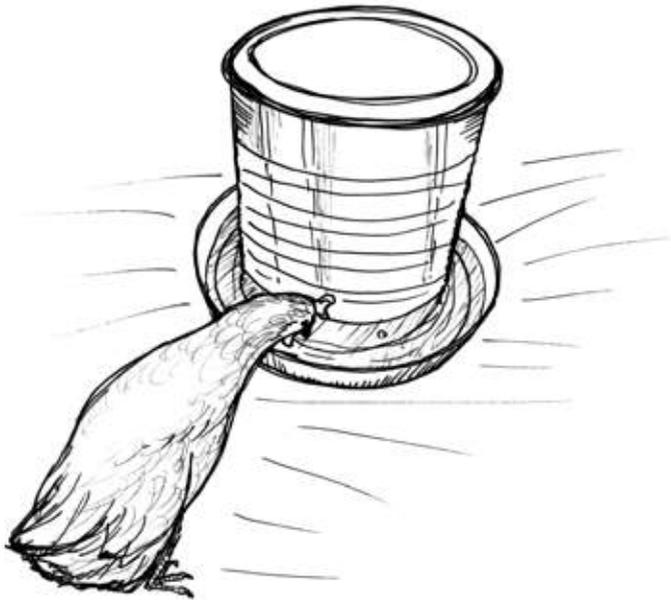


Illustration: www.wrightinger.co.uk

Clean, fresh water is best. However, when water is scarce, chickens can be offered used water, as long as it contains no detergents or other harmful substances. The water container or waterer should:

- not be too deep, so that all age groups can drink without the risk of drowning
- not be too large, to avoid it becoming contaminated with droppings (and to stop ducks bathing in it)
- be cleaned daily and kept in the same place so that the chickens get used to it (which is particularly helpful if you need to add medication via the water)
- be placed where the chickens will be at least risk of attack by predators
- have a flat bottom and vertical sides so that it is not easily tipped over.
Waterers need to be cleaned and refilled daily (or more frequently if they become dirty during the day).

Waterers for young chicks should have a lower lip at about the same height as the back of the chicks, so that the chicks can easily reach the water but will not dirty it. Place stones on the floor of the waterer so that the chicks will not drown if they accidentally step into it.

Simple ration for supplementing local chicks aged 0 to 6 weeks

Ingredient	Quantity
Crushed maize grain	1kg
Wheat bran, sorghum bran or millet bran	1kg
Sunflower oil cake	2 match boxes
Sea shell or bone meal/salt mix	1 match box (1 measure of salt per 13 of bone meal)
Fish or blood meal	2 match boxes
Sesbania leaves	2 match boxes

Chicks below the age of six weeks should be given as much of the above feed as they can eat.

How much to feed your birds

The table on page 15 shows the amount of feed given to local poultry at different ages. The third column shows the total amount eaten by a chicken at a particular age (the combined amount from supplementary feed and scavenging).

Age (weeks)	Approximate amount of supplementary feed given to each bird per day (grams dry weight)	Approximate total amount eaten per bird per day (grams dry weight)
1 week	10–15g	12–15g
2 weeks	15–20g	15–21g
3 weeks	21–30g	21–35g
4–6 weeks	30–40g	35–50g
8 weeks	30–40g	55–60g
16–27 weeks (grower)	30–50g	65–80g
28 weeks (adult)	30–50g	100g

You should limit the quantity of supplementary feed you give to village chickens to no more than 30 per cent to 50 per cent of their full intake as an adult (for feed levels and needs, see the table above). In general, this means giving a maximum of 30–40g per bird per day from weeks 4 to 6 onwards, and gradually reducing the supplementary feeding. Chickens will get most of their food through scavenging. However, if the chickens are confined and are not able to scavenge, the full amount of feed needs to be given to them.



Illustration: Petra Rühr-Rouendaal, *Where there is no artist* (second edition)

9

HOUSING

Village chicken housing and shelter

Housing village chickens at night will protect them from rain and the cold; from predators such as dogs, rats, snakes and other wild animals; and from theft. Housed birds are easier to catch if you need to inspect them for signs of illness or injury, or to vaccinate them against disease.

Types of housing

Adult birds and growers are often provided with elevated night housing. Chicken houses built close to the ground are suitable for hens with young chicks that cannot enter an elevated house. It may be necessary to dig a drain around such a house or to raise the floor, so that it will stay dry during the rainy season. A house which is about 4m long, 1m wide and 1.5m high can hold 8–10 adult birds if they are kept enclosed all day, or about 20 for overnight housing. The house can be completely covered with wooden slats or be partly open with netting or woven bamboo.

Constructing a chicken house

Here are some simple rules for building a chicken house:

- Clear the grass and bush for about 3m on all sides of the house, to keep snakes and rats away from the chickens.
- A house can be built cheaply using local materials such as tree and bush branches or reeds and thatch grass.
- The size of the house will depend on how many birds the farmer has (or plans to have) and if they are to be kept in the house overnight or for longer periods. If too many birds are kept together, they may start to peck each other, leading to injury and diseases.



**A raised chicken house
made from local materials**

Illustration: © Agromisa Foundation and CTA

- Always remove the bark from timber used to construct the houses so that pests and parasites such as ticks and mites will have nowhere to hide.
- The house should protect the chickens from rain and wind but have enough ventilation to provide birds with fresh, clean air.
- The opening should be wide enough to allow the inside of the house to be cleaned easily and should be fitted with a door or other means of closure.
- Because many infectious diseases affecting chickens are transmitted via their droppings, the floor of the house should have openings to allow droppings to pass through to the ground. The spaces between the slats will depend on the age and size of the chickens, ensuring that they have adequate foot support and that droppings can pass through.
- If the chicken house is built on poles, it should be at least 1m above the ground but not so high that the inside of it cannot be reached by the farmer.
- Putting inverted metal cones around the poles of a chicken house will make it harder for rats and snakes to get into it (see page 20).

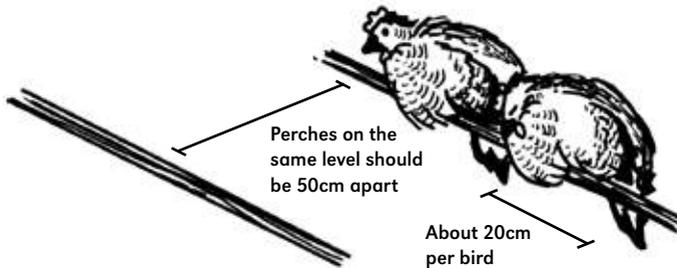


Illustration: © Agromisa Foundation and CTA

Roosts/perches

Chickens favour perches as they like to sleep above the floor. Roosting on perches will minimise contact between the birds and their droppings, and therefore help to prevent diseases. The roosts can be made from bamboo or straight tree branches (but remember to remove the bark from the branches). They should be about 3cm in diameter. Each adult chicken requires about 20cm of perch space. If more than one perch is needed, the perches should be about 50cm apart and at the same level. If they are at different levels, the birds will fight to reach the highest perch when they come in to roost in the evening, causing them unnecessary stress.

Maintaining a chicken house

Cleaning the chicken house helps to prevent and control diseases, especially external parasites such as fleas and mites. Here are some guidelines:

- Remove droppings and litter from inside the house regularly (once a week) or, if the house is portable, move it to a fresh area.
- Fumigate the chicken house regularly with smoke (by lighting a fire under elevated chicken houses) to control external parasites (every six months). It may be necessary to remove the birds from the chicken house before you start fumigating it.
- Keep the area around the house clear of grass and bush to keep snakes and rats away.
- Do not overcrowd the chicken house.
- Empty a house where sick birds have been; clean it or even burn it and build a new one.
- Remove the droppings from underneath the chicken house regularly. Compost them for at least three weeks, and then place the manure on gardens, mixing it into the soil to reduce the chance of diseases and parasites accumulating and to prevent flies from reproducing in it. Flies will not be a problem if the manure is kept dry.
- Place wood ash or lime on the floor and walls to repel external parasites and to make it easier to remove manure when cleaning.
- Tobacco leaves are also effective in controlling pests.

Safe use of chicken manure

Break up chicken manure so that it dries quickly; this will help to kill infectious agents and the eggs of parasitic worms within the manure. Digging composted manure into vegetable gardens will fertilise the soil, leading to better plant growth.

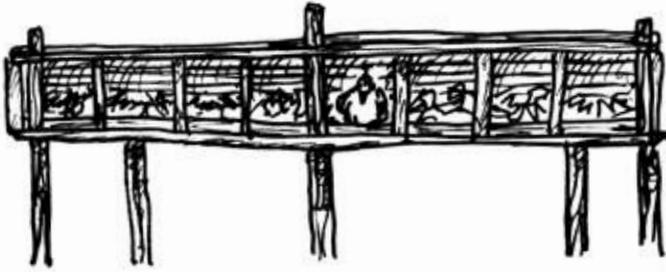


Illustration: © Agramisa Foundation and CIA

Providing nests

Providing clean nests in safe places helps control and improve productivity. The quality of eggs is better if they are clean. Moreover, it is easier to find eggs if nests are provided rather than allowing birds to lay eggs in hidden locations. Pad the nests with clean, dry nesting material (eg leaves, straw, old cloth or even sand) to help keep the eggs warm and minimize the risk of breakage or contamination. Here are some tips:

- A sufficient number of nests should be provided: one nest per hen.
- Eggs intended for brooding should not be completely removed from where the hen laid them; otherwise they might be abandoned. Leave at least one egg in the nest.
- Nests should be located in safe places, protected from rain and wind, and out of reach of dogs, ants and other predators.
- Nests should be constructed in a way that protects the eggs from cooling from below or from falling out of the nest.
- Nests should be cleaned regularly.
- Nests that have been used for a long time should be fumigated with smoke (eg every six months).
- If there has been a serious outbreak of disease or a heavy infestation of external parasites (eg lice), the nests should be burnt and replaced using new materials.

NOTE: A hen will hatch more chicks if her nest is clean, dry and safe. She will favour a nest that sits above the ground and is provided with clean straw or grass.

Protection from predators and theft

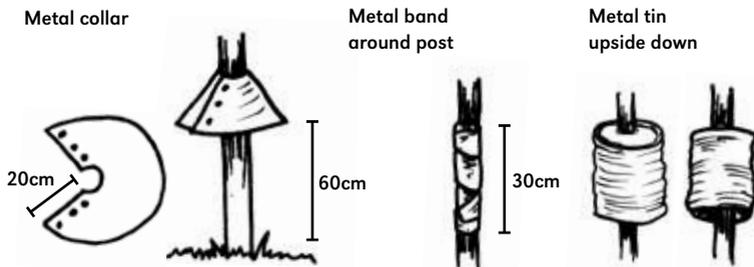
Predators

Predators are a major problem in village chicken production, causing almost unavoidable losses in free-range systems. Predators of chickens include other birds, mammals and reptiles, and even ants.

Protective measures should be designed according to which predators are common in the region and how these predators hunt. Birds of prey often circle high in the air and suddenly dive to catch a victim seen on open ground. Other predators, including some birds, hide in trees in search of their prey. Wild cats, foxes and other four-legged hunters usually prefer to use the cover of bushes to approach their prey unnoticed. Rats and snakes are more likely to catch chicks that are confined or housed. Losses due to ants have been reported only for caged chicks, and where the chick shelter has been built across the ants' nest or path. Farm animals such as dogs also enjoy an occasional chicken dinner and should be kept under control.

Implementing the following measures will help reduce losses due to predators:

- Construct shelters to offer protection from predators. Build a chicken house on poles and put inverted metal cones around the legs to make it harder for predators to enter.
- Clear the grass and bush around the chicken house, to limit hiding places for predators.
- Do not provide feed or water in extensive open areas where chickens can be attacked easily by birds of prey.



Keep rodents and snakes away by adding inverted metal cones or tin cans. Ensure the cones are tightly fixed to keep very small rodents out.

Illustration: © Agramiso Foundation and CITA

- Do not provide feed or water next to dense bushes where cats, rats or snakes can wait for their prey.
- Hang small pieces of tin in a tree or on a long pole close to the area to be protected. The noise produced and sunlight reflected when the tin moves with the wind may deter predators.
- Chickens with coloured feathers are better camouflaged than uncoloured (eg bright white) birds, which are an easier target for a predator.

Theft

- In areas where chicken theft is a serious problem, many farmers keep their birds inside the family home during the night, rather than in a separate chicken house. In their opinion, a separate chicken house makes it easier for thieves to steal the birds. However, keeping birds in the house is unhygienic especially when the birds suffer from parasites or diseases such as HPAI (avian influenza) and, if the flock is big, it is impractical.
- Keeping the birds in a separate but safe place is therefore strongly recommended. Anti-theft measures may include the following:
 - The chicken house could be fitted with a very noisy opening that will alert the owner in case of attempted theft.
 - Roosts could be placed at more than an arm's length from the opening so that birds are out of reach of thieves. Disadvantages of this type of chicken house are that it is more difficult to clean and for the owners to catch the birds for vaccination.
 - The chicken house could be built where the owners can see it by peeping through their window.

Farmers can also collaborate and come up with schemes to help protect one another's flocks.

10

DISEASES AND HEALTH MANAGEMENT

It is very important to learn how to detect an unhealthy or sick bird, so that you can take the right action.

● **Healthy bird**

Alert and on guard, with bright eyes and comb. Walks, runs, stands and scratches continuously, and eats and drinks normally. Smooth and neat feathers. Soft, compact droppings. Breathes quietly.

● **Unhealthy/sick bird**

Tired and lifeless. Dull eyes and comb. Sits or lies down. Lays less or stops laying. Ruffled and loose feathers. Wet droppings with blood or worms, diarrhoea. Coughs, sneezes and breathes noisily.

Diseases have a negative effect on chicken production, and farmers should ensure their farms are as free from disease as possible. Diseases may kill chickens or cause them to have stunted growth. They also reduce the number of eggs laid by hens. A farmer generally loses money due to reduced production.

Diseases may be introduced into the flock by:

- buying chickens from unreliable sources
- allowing adult birds which may be disease-carriers to mix with chicks
- allowing chickens that are disease-carriers from other poultry farms to mix with healthy chickens
- allowing rodents, flies and wild birds, which may be disease-carriers, to mix with healthy chickens
- allowing people, who may carry germs on their feet, hands or clothes, to mix with healthy chickens
- using old litter which contains germs; not cleaning or disinfecting the poultry houses
- using contaminated equipment (feed and water troughs)
- feeding contaminated and stale feed to chickens. Dirty water is also not good for them.

Diseases will be very serious in chickens that are:

- not well fed with the correct type of feed
- given stale food which may disturb their digestive system
- not given clean water in clean troughs at all times

- kept in houses that have wet litter or where birds do not have enough ventilation
- not vaccinated against disease and so have low resistance to diseases.

Farmers can control diseases on their farms by taking these general control measures:

- Feed birds well with the right type of food.
- Give birds plenty of clean, fresh water in clean troughs at all times.
- Never feed stale food to birds.
- Do not mix chicks with older birds when brooding.
- Never buy chicks from sources that are unreliable.
- Clean and disinfect the poultry house. Feed and water troughs should be cleaned regularly.
- Never use contaminated litter.
- Do not allow visitors into the poultry house.
- Control rodents in the poultry house.
- Carry out the recommended vaccination programme.

NOTE: Although local breeds may look healthy, they may be disease-carriers.

Healthy bird

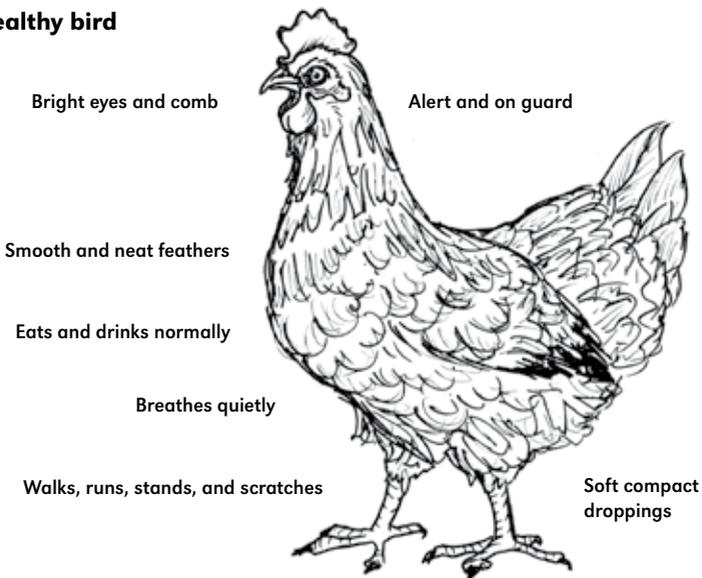
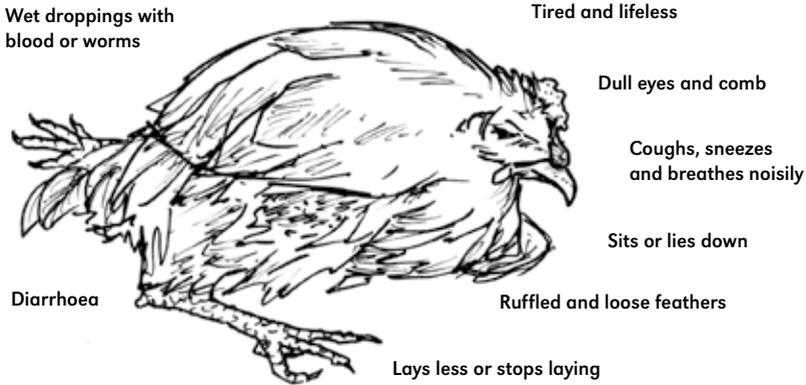


Illustration: www.wingfinger.co.uk

Unhealthy or sick bird



Sick chickens should be killed and burnt to avoid spreading the diseases to other birds. They should not be eaten, because some diseases may affect humans too. Also, the bones left after eating may help spread the disease to other birds.

Common diseases

Some of the common diseases to affect poultry are:

- bumblefoot
- chronic respiratory disease
- coccidiosis
- fowl cholera
- fowl pox
- Newcastle disease.

Bumblefoot

This is a disease caused by certain germs that enter the feet of birds through wounds or bruises caused by sharp nails, thorns or coarse litter. It causes the feet to swell.

CONTROL AND PREVENTION

- Remove nails, sharp stones and coarse litter from the house.
- Put sufficient litter in the house so that birds do not scratch on the floor, which may be rough.

TREATMENT

- Open the swelling with a clean, sharp knife or razor blade to remove the pus.
- Clean the inside of the wound after removing the pus.
- Disinfect the wound with iodine.
- Isolate the bird and confine it in a small space while it is being treated.

Chronic respiratory disease (CRD)

Chronic respiratory disease is one of the commonest diseases in poultry and is caused by bad management practices, including poor ventilation of the poultry house, overcrowding, dusty conditions in the poultry house/pen and low/cold temperatures.

CONTROL AND PREVENTION

- Do not put too many hens in a house – do not overcrowd the pens.
- Keep the birds healthy by feeding them well.
- Do not introduce diseased chickens into the flock.
- Do not rear chicks with adult birds.
- Maintain hygienic conditions in the poultry house; keep it well ventilated and dust free.
- Keep ammonia emissions at minimum levels by maintaining dry conditions in the pen. Wet conditions encourage the decomposition of faeces, which releases ammonia gases. Ammonia gases cause irritation in the respiratory system and itching in the eyes.
- Maintain the correct temperature in the poultry house/pen.

Coccidiosis

The disease is spread by:

- birds eating food or drinking water that is contaminated with coccidiosis germs
- food or water put in dirty troughs contaminated with coccidiosis germs
- bedding contaminated with coccidiosis germs
- older chickens, which may be disease-carriers, mixing with chicks.

SYMPTOMS

Clinical signs can be seen four to six days after infection and are characterised by the following:

- blood-stained diarrhoea/faeces

- wings drooping down, ruffled feathers and closed eyes
- chicks eating less food and growing thinner.

Most chicks die after suffering for 6 to 10 days, and the death rate may be very high.

PREVENTION

- Feed chicks with mash containing a coccidiostat (a substance that helps prevent the growth of coccidiosis parasites).
- Keep the litter dry all the time. Wet patches should be removed.
- Turn the litter regularly to keep it dry.
- Clean the house thoroughly before placing chicks in it.
- Do not reuse old litter.
- Do not mix age groups in one house.
- Remove dead birds promptly from the house.
- Treat sick birds promptly.

TREATMENT

- Seek expert advice from qualified personnel.
- You can use anticoccidiostatics (medicine for treating coccidiosis).

Fowl cholera

SYMPTOMS

- Birds are drowsy and have ruffled feathers.
- Birds have yellowish or green diarrhoea.
- Birds eat less food but they drink more water.
- Egg production is low.
- A few birds die each day. Mortality rate may reach 80 per cent.

CONTROL AND PREVENTION

- Vaccinate the birds.
- Remove dead birds from pens promptly and dispose of them by burning or burying them deep in the ground.
- During an outbreak, control the movement of birds between pens/areas.

After an outbreak and before re-stocking:

- Remove bedding from the house/pen and burn it.

- Clean and disinfect poultry pens and all equipment (see page 18, ‘Maintaining a chicken house’). Whitewash the pens if possible.
- Rest the poultry houses/pens for three to four weeks before introducing new stock.

NOTE: Specimens should be sent for laboratory diagnosis.

Fowl paralysis

Paralysis or lameness of legs is often due to a disease called fowl paralysis.

SIGNS AND SYMPTOMS

Clinical signs vary according to the type of disease. General signs are as follows:

- One or both legs may be completely paralysed. In such cases, the bird fails to walk. If paralysis is slight, birds walk unsteadily.
- Wings that are paralysed hang down.
- One or both eyes may turn. This condition is often called ‘white eye’ or ‘grey eye’.
- Egg production falls.

CONTROL

- Rear chicks in clean houses upwind from adult birds.
- Do not rear chicks in houses previously used by adult birds.
- Remove affected birds and kill them.

Fowl pox

SYMPTOMS

- There is a watery discharge from the eyes and later a yellowish pus may accumulate in the eyes.
- There are many sores on the head, combs and wattles.
- Sometimes the whole eye may be swollen and closed.
- Sores may be found in the mouth; if this occurs, birds eat less food.
- Sores may be found in the throat. Cheesy yellowish material may be formed from the sores found in the mouth and throat. These may make breathing difficult if they accumulate.

CONTROL AND PREVENTION

Give the recommended fowl pox vaccination to the birds.

Newcastle disease

SYMPTOMS

- Birds breathe through the open mouth – a sign that they are having difficulty breathing because mucus is accumulating in the mouth and nostrils and causing a rattling noise. Sticky mucus comes out from the mouth and nostrils.
- Bird may develop nervous signs such as twisting the head, neck circling, shivering and paralysis of legs and wings. Birds may be drowsy and sleep for most of the time with their heads turned backwards or drawn to the body.
- The crop (part of the bird's food pipe, at the base of the neck) may be swollen.
- Birds may have yellowish diarrhoea.
- Eggs laid during sickness may have soft shells or the shells may be rough.
- Birds eat less food but drink plenty of water.
- Egg production is low.
- Many birds die within one day. In serious cases, birds that appeared very healthy may be found dead in the nest or on the floor before showing any of the above symptoms. Mortality rate is often very high, between 90 and 100 per cent.

CONTROL AND PREVENTION

- Vaccinate all chickens, including chicks from two weeks of age.
- Remove dead birds from the pens promptly and dispose of them by burning or burying them deep in the ground.
- During an outbreak, control the movement of birds between pens/areas.

NOTE: Specimens should be sent for laboratory diagnosis.

After an outbreak and before re-stocking birds:

- Remove bedding from the house/pen and burn it.
- Clean and disinfect poultry pens and all equipment (see page 18, 'Maintaining a chicken house').
- Rest the poultry houses/pens for three to four weeks before introducing new stock.

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INTERNAL PARASITES

Internal parasites are the parasites that are found inside the chicken and that feed inside its body. The most serious internal parasites are those that are found in the digestive system of chickens. Those that are commonly found in chickens are roundworms and tapeworms. Most worms will be seen in the small intestine of chickens.

NOTE: Worms are more common in village chickens, ducks and guinea fowl.

The size of the worms varies according to the type of the worm.

- The fowl ascarid is a roundworm that is often found in the small intestine. It is about 5–7.5cm long and about the thickness of a match stick.
- Caecal worms are small worms about 1.5cm long. They are found in the caecum (a pouch at the start of the large intestine).

These parasites are bad because:

- They eat part of the food required by the birds for better growth and more egg production.
- They suck blood from chickens.
- They may cause wounds in the digestive system and thus prevent thorough digestion of food.
- They reduce the number of eggs laid in a day. They also reduce the growth rate of chicks and pullets (a hen which is less than one year old).
- They may kill chicks and pullets.
- Chickens are left in a weak condition and become susceptible to diseases.

Worms get into the body of chickens through the mouth. Chickens can get worms if:

- They eat termites (white ants), which are hosts of some worms.
- They eat certain beetles that are intermediate hosts for some worms.

The conditions that favour a high infestation of worms are:

- moist conditions in the chicken house
- using old litter for a very long time
- not cleaning and disinfecting the poultry house regularly.

It is difficult to know whether hens are suffering from internal parasite infestation. The general signs of sickness are as follows:

- Chickens grow thin even though they are fed.
- The growth rate of chicks and pullets is slow.
- Egg production falls if infestation is very heavy.
- In the case of very heavy infestation, birds die. Examine the intestines of a suspected bird for worms.

Control of worms

- Do not use old litter, which may contain the eggs or larvae of the parasites.
- Clean and disinfect the poultry house at regular intervals.
- Do not mix chicks with adult birds. This prevents the chicks from being infected with worms from adult chickens.
- Feed the birds well.

TREATMENT

Poultry can be treated for worms. Ask livestock specialists or your local veterinarian for the recommended de-wormers/medicines.

Systematic, regular movement of chicken houses and chicken runs helps prevent worm infections and allows the ground to recover from pecking and scratching. The house shown here has a floor of wire netting and is suitable for hens with young chicks.

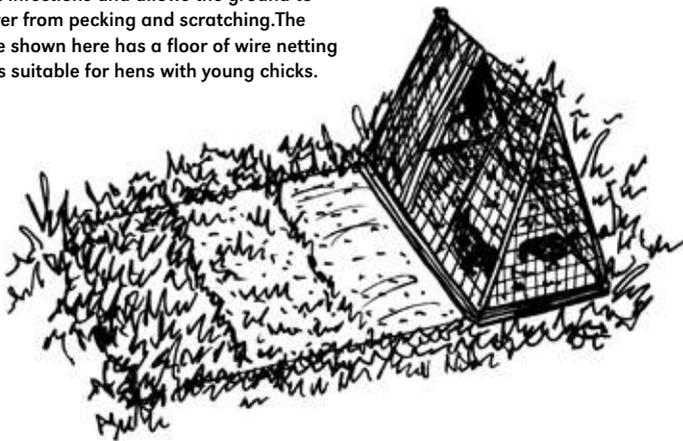


Illustration: © Agramisa Foundation and CITA

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EXTERNAL PARASITES

External parasites are parasites that are found on the body of a chicken. They may be found on the body of the bird throughout their life or they may only feed on the chicken but live in cracks, perch joints, litter etc. External parasites are mites, ticks and lice.

External parasites are bad for poultry for the following reasons:

- They may transmit diseases to poultry.
- They suck the blood from poultry/chickens. Birds with less blood are weak, less productive and more vulnerable to disease.
- Egg production decreases because birds spend more time scratching their bodies than eating.

Birds often have thick, rough legs because of a mite called scaly leg mite. This mite burrows underneath the scales of the leg, causing inflammation and thickening of the skin. Sometimes the legs may even be deformed.

Loss of feathers is often due to:

- moulting, which is natural
- depluming mites. When loss of feathers is caused by depluming mites, feathers do not grow again until the mites are controlled.

There are some signs farmers should look out for if they think there may be mites in a poultry house:

- Birds spend more time scratching their bodies.
- Legs may be swollen in the case of scaly leg mite.
- Many white or red mites may be seen attached to the wattles and combs of the birds. Sometimes they may be found around the eyes.
- When collecting eggs, mites will climb onto the farmer's body and start biting him/her.

These parasites are found:

- in wall cracks, perch joints, on the rough floor, in the litter and in nest boxes
- in the scales of birds' legs, as in the case of scaly leg mite
- in the birds' feathers, egg lice and depluming mites.

Take the following steps to avoid external parasites:

- Clean and disinfect the poultry house regularly. Remove all birds from the house and spray with recommended insecticide.
- Remove the old litter and burn it to kill all the external parasites that may be in it. The litter may also be used for manure in gardens but these gardens should be far from poultry houses.
- Mend all the cracks in the poultry house where insects hide.
- Dust the birds with recommended dusting powder.
- Dust insecticides on the litter and in the nest boxes.

Apply BHC emulsion or other recommended insecticides on the legs or bodies of hens to control scaly leg mites, red mites and depluming mites.

GLOSSARY

This glossary explains the meanings of difficult words according to the way they are used in this book.

- breeding** the mating of male and female birds to produce fertilised eggs
- brooding** caring for a batch of chicks
- candling** using a light source to check the contents of an intact egg
- clutch** a group of eggs that are hatched together
- coccidiostat** a medication to prevent the disease coccidiosis
- comb** the fleshy (usually red) skin at the top of a chicken's head
- culling** killing a chicken because it is old or of low quality
- incubating** maintaining the right conditions for hatching eggs
- litter** bedding for chickens, eg straw, sawdust and wood shavings
- parasite** an animal that lives on or inside a chicken, such as worms and mites
- pullet** a female chicken under one year old
- waterer** a container used to hold water for chickens
- wattle** the fleshy flap of skin under a chicken's chin



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