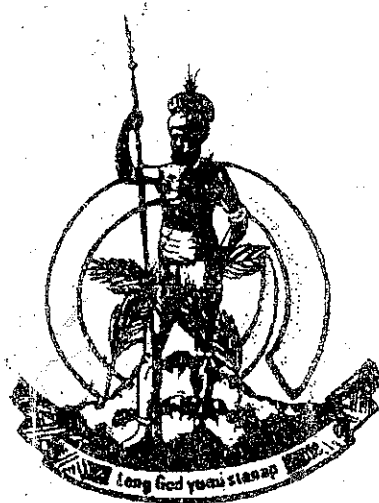


# AGRICULTURE IN VANUATU IMPROVING VILLAGE POULTRY



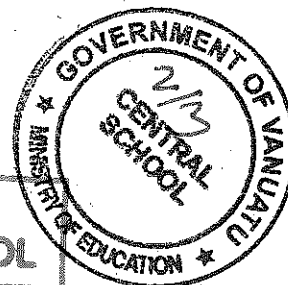
YEAR 8

Ministry of Education  
Port Vila  
Republic of Vanuatu  
2008

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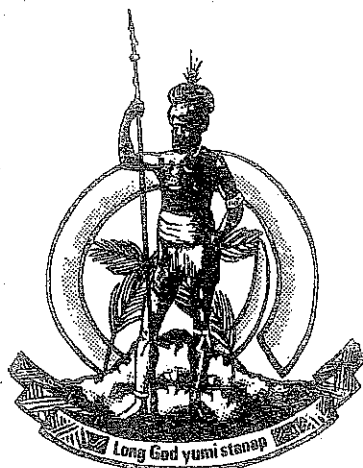
CENTRAL JUNIOR  
SECONDARY SCHOOL



AGRICULTURE IN VANUATU

# IMPROVING VILLAGE POULTRY

YEAR 8



Ministry of Education  
Port Vila  
Republic of Vanuatu  
2008

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## Introduction

One of the main concerns of Agriculture teachers in Vanuatu is the lack of teaching material resources which are of local taste as well as fitting the local environment.

This manual should meet some of those concerns to enable agriculture's teachers to teach along the same line and using the same course material.

Using this material should also provide students with sound background knowledge about improving village chickens to produce high productive yields.

It is the writer's hope that students completing this unit will have some interest in chicken production so as to continue for further education in agriculture or to return to improve rural nutritional status and to upgrade the Vanuatu economy at large. Since teachers majoring in other subject areas are bound to be teaching agriculture at this stage, it is the writer's hope that this manual be easy and effective for use both theoretically and practically.

## Objectives of this course

- 1 Name the external features of a hen, a rooster or other poultry.
- 2 Identify the major parts of a hen's digestive tract and explain how each of them functions.
- 3 Identify the major parts of a hen's reproductive tract and explain how each part of it functions.
- 4 Demonstrate the ability to distinguish between a hen in lay, and a hen that is not laying.
- 5 Describe the conditions required for successful incubation of eggs, using a broody hen.
- 6 Describe the conditions required for successful rearing of chicks in a village situation.
- 7 Identify at least five important characteristics of a healthy hen.
- 8 Identify the symptoms of, and treatment for:
  - (a) external parasites
  - (b) internal parasites
- 9 Describe the features of a management system that are required to keep a flock healthy.
- 10 Describe systems of management based upon the use of
  - (a) simple nestboxes
  - (b) poultry houses made of bush materialsand state for each of these how poultry kept in this manner would be more productive than poultry kept in a traditional village system.
- 11 Describe a system of intensive management based upon the use of a battery house, and give reasons why this system is not widely used in Vanuatu.
- 12 Identify the characteristics required in good breeding stock and improved breeds.
- 13 Demonstrate the ability to keep a small flock of poultry in semi-intensive or improved conditions, for a period of at least 3 days, including the preparation of a balanced diet from locally available foodstuffs.
- 14 Keep accurate production records, including a simple balance sheet for eggs sold.



## Section I

# Introduction to Chickens

### Teaching objectives

Upon completion of this unit the student should be able to:

1. Demonstrate an understanding of the type of chicken project that may be run.
2. State the importance of raising chickens in Vanuatu, paying particular attention to:
  - (a) nutrition value.
  - (b) how chickens are used.
3. Identify the difference between layers and broilers.

### Poultry ✕

We give the name poultry to a group of domesticated birds that are raised for their meat or their eggs. They include:

1. Chickens
2. Turkeys
3. Geese
4. Ducks

All poultry are birds, and as birds they all have the following features:

1. They have wings and feathers
2. They have a beak not teeth
3. They have a gizzard that does the work of the teeth in a mammal
4. They have no separate anus. Instead, they have a common opening for foetus, eggs, sperms, called a cloaca or vent.

### Chickens ✕

The type of poultry that is most commonly reared in Vanuatu is the chicken. The bush fowl or red jungle fowl (*Gallus gallus*) was brought to Vanuatu several thousands years ago by some of the first settlers. These fowls have inter-bred with European or other breeds of chickens introduced as later arrivals from overseas and dispersed.

Chickens are identified by different names as follows:

Male	-	<del>Hen</del> Rooster
Young Male	-	Cockerel
Female	-	Hen
Young Female	-	Pullet



## Uses of chickens x

Chickens are reared for many different reasons.

- a. as Broilers - chickens raised for meat.
- b. as Layers - chickens raised for eggs.
- c. in Hatcheries - chickens raised for their chicks.
- d. as Show business - chickens raised for show.

In Vanuatu chickens are mainly raised for meat, used especially at times of special ceremonies. The bi-products such as feathers are used for decorations during customary dances as well as for decorating mats for ceremonial purposes and baskets. The bones are a good source of phosphate fertilizer.

Chicken manure is a very good source of nitrogen

~~We keep chickens for:~~

### Importance of chickens

i.

#### Food

Both the eggs and the meat are a useful source of protein, meeting people's body building requirements.

The eggs supply mainly:

- calcium
- iron
- vitamin A
- protein

all of which are all elements important to the growth of young children.

ii.

#### Cash

iii.

#### Subsistence farming

iv.

#### Manure

- can be used as an ingredient of compost
- makes a good organic fertilizer, providing nutrients to crops.

v.

#### Feathers

- for use in custom ceremonies
- for stuffing cushions, pillows and duvets, warm jackets and other items

x. 6

#### ~~Bones and blood~~ Blood and Bone manure

- as organic fertilizers, as they are rich in phosphorus

Poultry products have taken an important place in meeting the nutritional needs of Ni-Vanuatu for many years. Among local products of animal origin the chicken's egg and meat rank high in nutritional value.

## Section 2

# External features of a chicken

### Teaching objectives

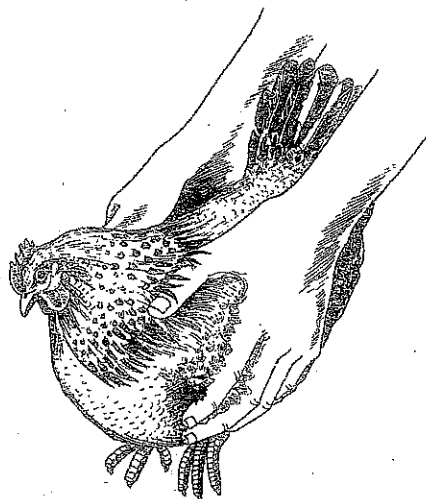
Upon completion of this unit students should be able to:

- 1.. Handle a chicken in the correct manner
2. Name the external features of a hen, rooster or other poultry
3. Draw a chicken and label its external features
4. Differentiate between the characteristics of male and female chickens.

### 1. Handle a chicken correctly

Steps and key points in doing the job:

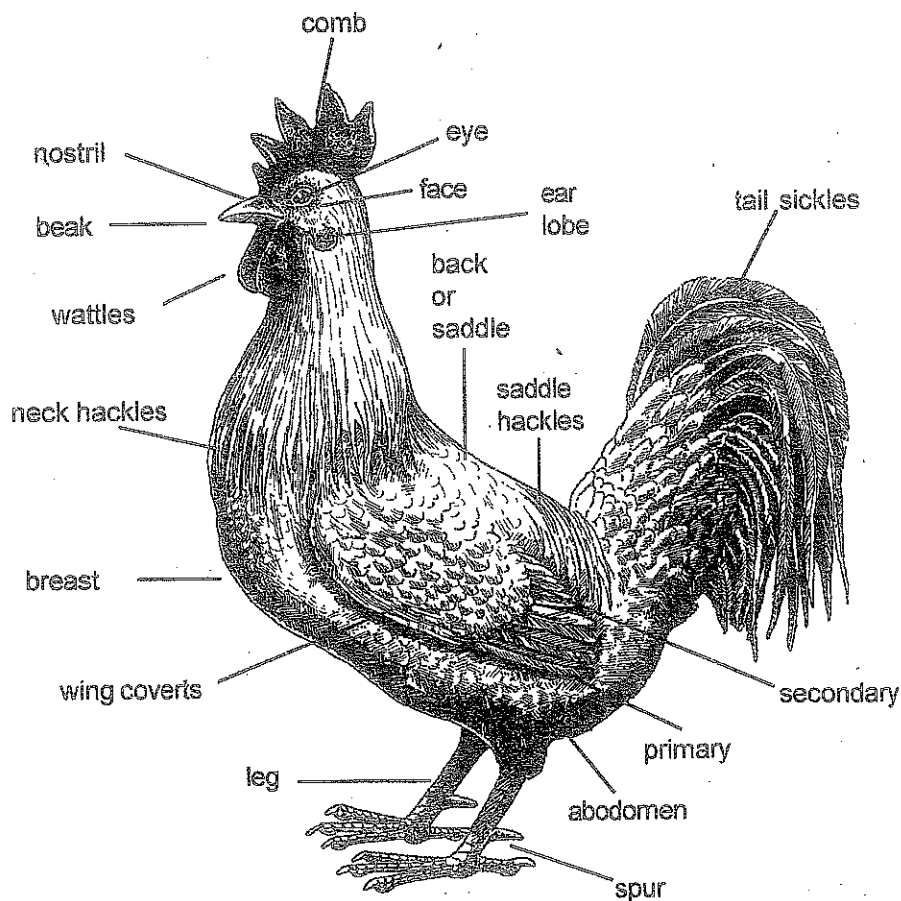
- a. Enter the chicken yard, house or fence
  - i. Wash hands and feet before entering house or fence for purposes of hygiene.
  - ii. Be as calm as possible.
- b. Select which chicken is to be handled
  - i. Move slowly towards the selected chicken.
  - ii. Take the chicken in a firm grip.
  - ii. Do not allow the bird to flutter as it will alarm the flock.
- c. Handle the chicken
  - i. Get a firm grip on each tarsus.
  - ii. Hold one tarsus between the middle finger and the forefinger.
  - iii. The other tarsus should be between the forefinger and the thumb.
  - iv. Handle firmly from the *side*, under the *abdomen*, with the two hands. Care should be taken on having the bird "*quiet*".



## 2. The external features of a chicken

### a. The main features

Once you are holding the chicken securely, identify the different external parts, as shown in the graphic below.



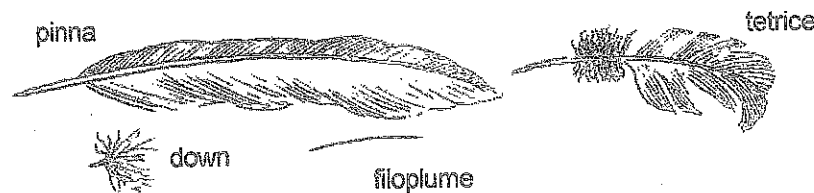
b. Different types of feathers and their uses

The body of a chicken is covered with feathers.

The feather develops from the skin and has the functions of protection and locomotion.

Steps in doing the job

Pluck out one of each type of feather and identify its purpose.



Key points

- a. The pinnae are the long rigid feathers. They are used main for flying. These are sometimes called primary feathers.
- b. The tectrices are shorter and more flexible than the pinnae and are sometimes called secondaries.
- c. The down feathers are small and tufted. These feathers mainly provide for thermal insulation, keeping the bird warm.
- d. Filoplumes are small unshafted feathers carrying only a few barbules.

3. Diagram of a chicken

Now draw your own diagram of a chicken and label its main external features.

4. Differences between the characteristics of a male and a female chicken

Practical work

The difference between the characteristics of a male and a female chicken can be best understood by handling them.

Female chicken (hen) - key points

- a. Shorter comb
- b. No presence of tail sickle
- c. Shorter neck hackles
- d. No presence of spur (depends on type of breed)
- e. Shorter wattles
- f. Fluffier abdomen

- 
- g. Shorter beak
  - h. Shorter ear lobe

A male chicken (rooster or cock) - key points

- a. Overall, the male bird is much larger than the female bird.
- b. The comb is much larger
- c. Longer tail sickles
- d. Longer tarsus
- e. Larger shank
- f. Larger wattle
- g. Presence of the spur

## Section 3

# The digestive system

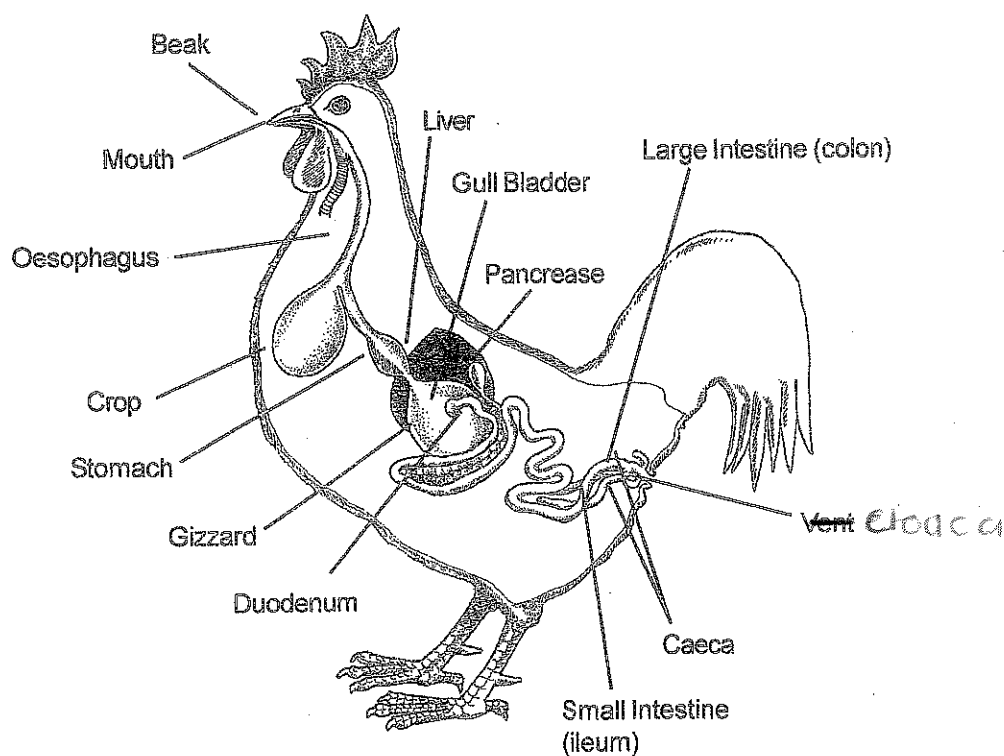
### Teaching objectives

Upon completion of this unit the student should be able to

1. Name the major parts of a hen's digestive tract
2. Explain how each of them functions.

### Digestion and the digestive system

Digestion is the process by which an animal breaks down food, so that it can be absorbed into the body. The digestive system of a chicken is shown below.



### The parts of the digestive system and their functions

The parts of the digestive system of a chicken function as follows:

#### Alimentary canal

This runs from the mouth to the vent. The alimentary canal and the organs joining it make up the digestive system of the animal.

#### 1. Beak

This is used for pecking. The food is eaten quickly

- and swallowed whole.
2. Oesophagus or Gullet: the food passes down to the crop though this tube.
  3. Crop This stores the food and softens it.
  4. Proventriculus or Stomach This produce gastric juice, including weak hydrochloric acid to digest protein food.
  5. Gizzard Grit (small pieces of stone) swallowed by a hen is held here with the help of the muscular walls of the gizzard. The grit helps grind the food.
  6. Duodenum This is the first part of the small intestine.
  7. Pancreas This produces pancreatic juice which has many enzymes to digest the food. It secretes the digestive juice to help to break down the food.
  8. Liver This is the largest organ in the body  
It stores a to large amount of blood  
It stores the excess digested food like sugar  
It produces urea
  9. Gall-Bladder This produces bile, important in the digestion of fats and oils.
  10. Ileum or Small Intestine This is also produces enzymes to finish the *digestion* of food. It allows the soluble food to be *absorbed* into the blood. Enzymes produce digestive juice.
  11. Caeca } There are two close tubes joining the ileum and the colon.
  12. Colon or Large Intestine } Here water is reabsorbed. The colon is very short. *Undigested food before it passes*
  13. Vent } The *foeces* <sup>cut</sup> and urea are passed out from here.

## Section 4

# Reproduction

### Teaching objectives

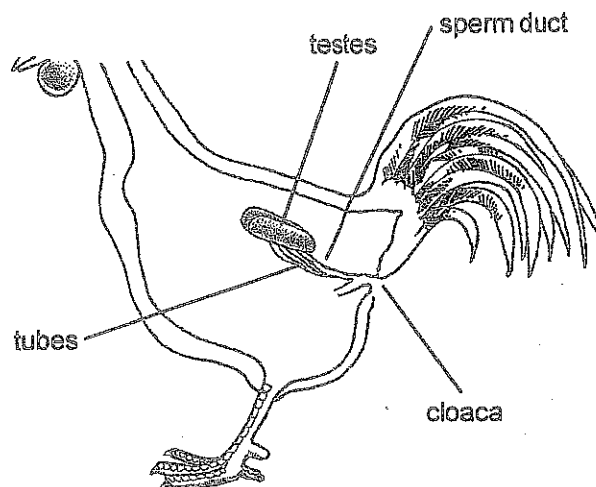
Upon completion of this unit a student should be able to:

1. Identify the reproductive organs of a rooster and a hen and describe their functions.
2. Describe the development of an egg from the point of ovulation to when it is laid.

### Fertilisation in chickens

Fertilisation is the union or joining of the male sperm with the female egg to make it grow into a chicken.

#### Male reproductive organs

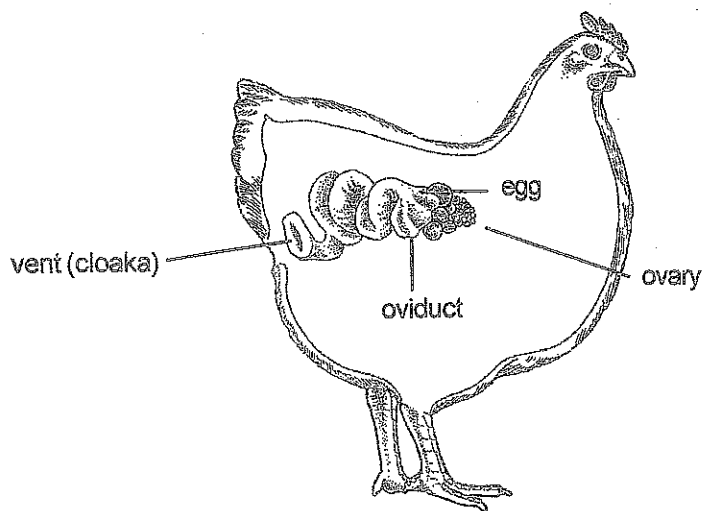


The male chicken is called rooster or cock. Inside his body are two pale yellow organs called testes which make the *fluid* or *semen*. This semen contains many small sperm which can join with an egg and make it grow into a chicken. There are small tubes coming from the testes. These tubes take the sperms to the cloaca. The sperms are kept there until the rooster mates with a hen.

#### Female reproductive organs

The female sex organ is called the ovary. It produces female gametes called ova (singular ovum)





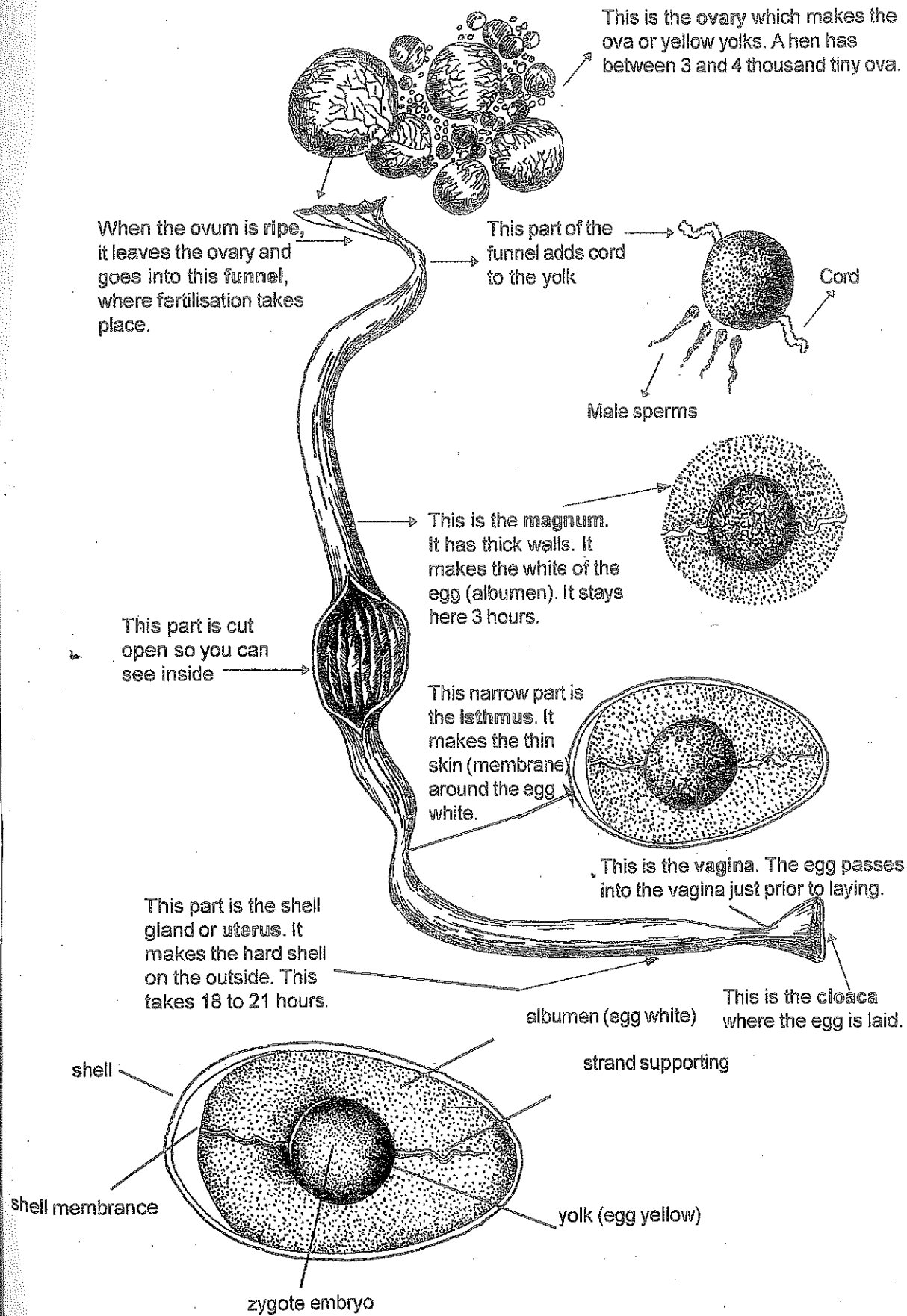
We call the process of union between the female and male mating. During mating the sperms are passed from the vent of the male to the vent of the female.

#### Note

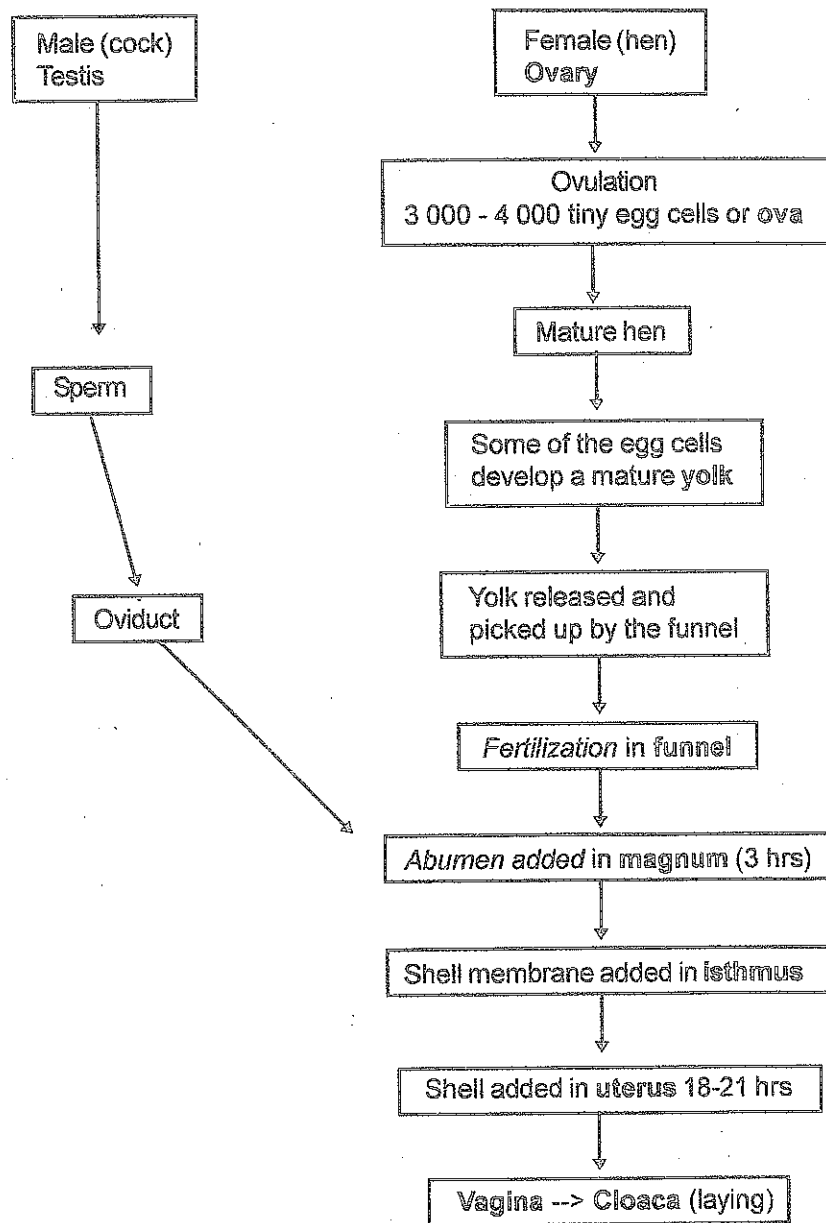
There is no oestrus cycle with chickens. The hen can lay eggs without mating with a rooster but these eggs are infertile. Only eggs produced after mating are fertile and these can develop normally to produce a chicken.

#### Egg formation

The process of the development of an egg in the oviduct is shown on the following page. The journey from the time of ovulation which is when the ovum (yellow yolk) enters the funnel to the time when the fully developed egg is laid through the cloaca is about 24 hours.



The same information is shown in a different form here, to assist the students' understanding.



## Section 5

# Hens in lay and broody hens

### Teaching objectives

Upon completion of this unit the student should be able to

1. Identify the signs of a hen in lay.
2. Set up a trap nest to test whether a hen is in lay or not.
3. Identify the signs of a broody hen.
4. State what should be done with a broody hen in
  - (a) an egg production project
  - (b) a meat production project.

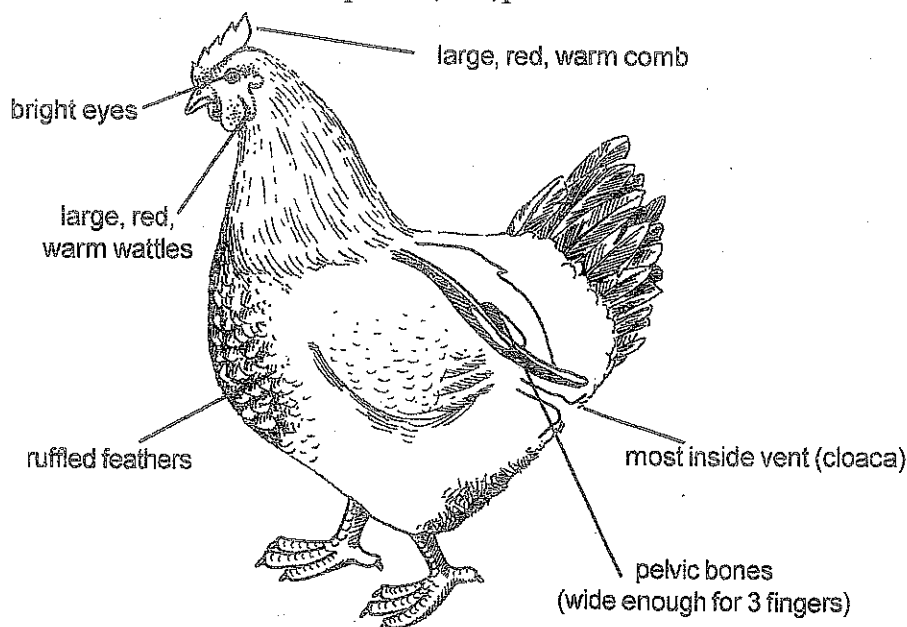
### Laying of eggs

A hen usually lays one egg a day. She usually works for a proper place to lay a batch of eggs, before she sits on it for incubation. A hen which sits on her egg for hatching is called a *broody hen*. Unfortunately when the hen is broody she will not lay any more eggs.

### Signs of hen in lay

A hen in lay should have the following characteristics:

1. Comb - large/bright red
2. Face - bright red
3. Vent - enlarge, smooth, moist, bluish white
4. Pubic bones - (Thin), pliable, spread apart
5. Abdomen - expanded, soft, pliable



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If hens are being kept for their eggs, it is important to maintain them in a laying condition. If hens do not lay regularly, egg production will not meet requirements of the project.

## Broodiness

We use the term broody to describe a hen which has stopped laying and is sitting on its eggs to hatch them.

### Signs of a broody hen

1. The hen sits on its eggs trying to hatch them.
2. It will not leave the nest.
3. If it is approached it gives a "threat display" ruffling its feathers.
4. If an egg is placed near it, it pulls it under itself with its beak.
5. If you lift it up it feels light in weight because it has not been eating.

A hen will become broody if it has a lot of eggs in the nest. To prevent it from becoming broody you can keep removing some eggs making sure that at least 2 eggs remain in the nest. If you remove all eggs from the nest the hen will leave the nest and make another one.

### How to identify a broody hen

To be sure a hen is not laying you must isolate it for a few days in a *separate* cage or trap nest.

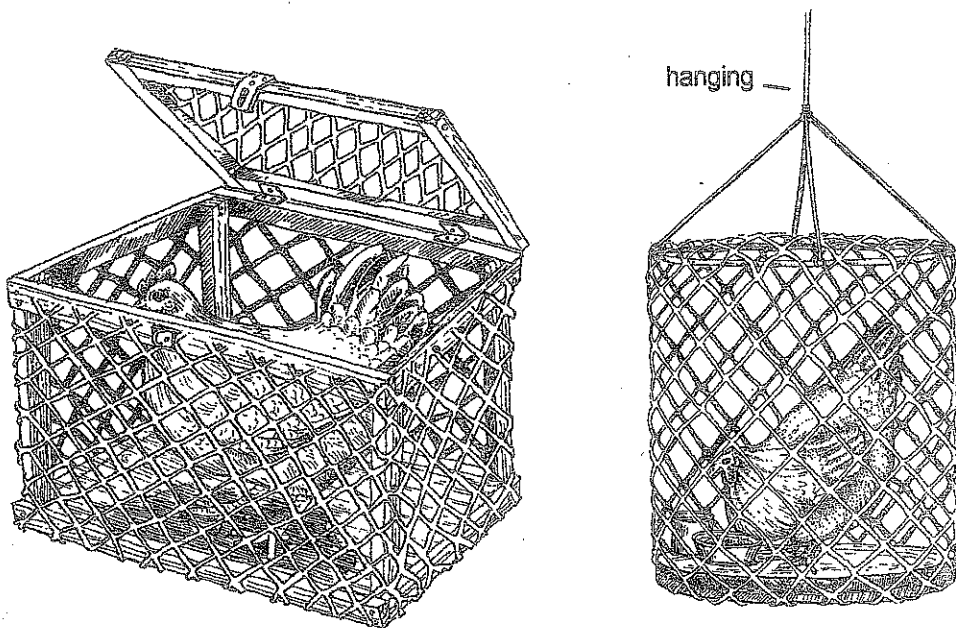
#### Practical Work

Aim: to test for broodiness

Materials required: a hen suspected of being broody, a trap nest, food

1. Put a broody hen in a trap nest for 36 hours. Provide her with feed.
2. Raise the trap above the ground slightly, to let cool air circulate under the hen. If she has been broody this will help her forget the warm nest. She might begin to lay again after a few days.
3. If the hen lays, put her back with the flock.

Two kinds of trap nest



Trap nests made of wire netting walls and floor

If a hen is broody, there are two alternatives

1. If you are keeping chickens in order to collect eggs, a broody hen must be *culled* and *slaughtered*, because this shows it may not lay any more eggs. Cull means to remove an animal from the flock because it is no longer productive. This is part of good management.
2. If you are keeping chickens to provide meat, a broody hen should be kept and encouraged to hatch and rear its chicks.

## Section 6

# Daily management

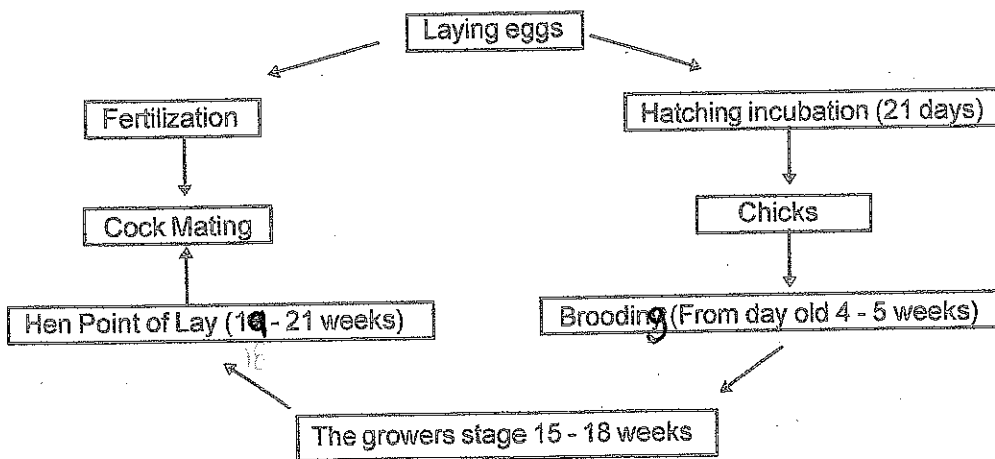
### Teaching objectives

Upon completion of this unit the student should be able to

1. Describe the conditions required for the successful incubation of eggs, using a broody hen.
2. Describe the conditions required for successful rearing of chicks in a village situation.
3. Successfully look after a small flock of poultry in semi-intensive or improved conditions, including the preparation of a balanced diet from locally available foodstuffs. describe the features of a management system that are required to keep a flock healthy.

### The life cycle of a chicken

The diagram below shows the normal life cycle of chickens.



### The incubation of eggs using a broody hen

While broodiness is not a desirable characteristic in a hen if the flock is kept for egg producing purposes, a good broody hen is required if you are planning to raise chicks.

Adequate conditions for a hen to sit on its eggs until they are hatched out must be provided. See the section on different types of management for further information.

## Working with chickens

The following rules will help the students to be successful in their project.

1. Never surprise the chickens.
2. Move slowly in the chicken house.
3. Keep to a regular routine every day:
  - (a) feed them
  - (b) give them water
  - (c) clean the food and drink containers
  - (d) collect the eggs

## The food and water supply

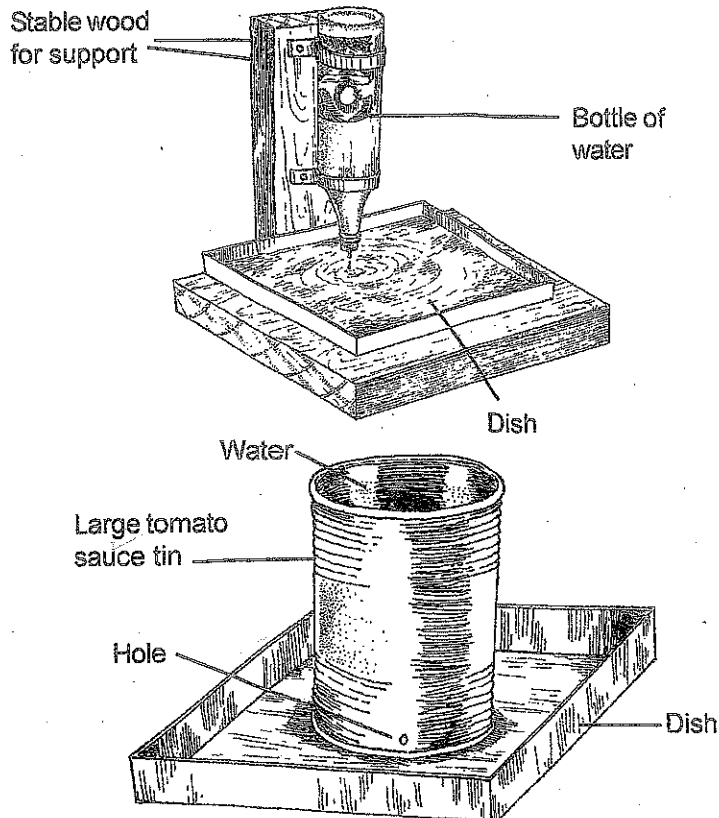
### Feeding troughs (feeders)

These need to be stable, easy to clean and big enough for all the birds (chickens). Birds should not be able to get into them.

### Drinking troughs (drinkers)

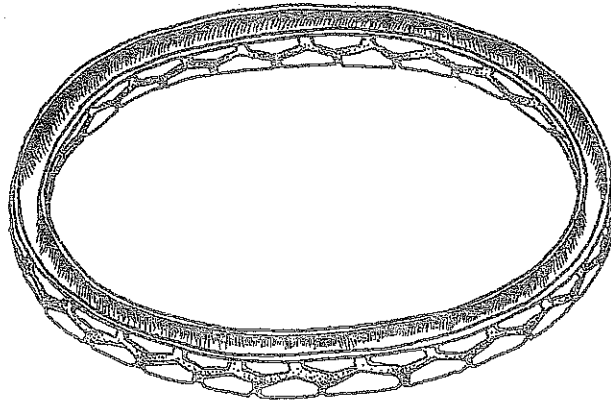
These must supply clean water which cannot be soiled by the birds walking in it. The supply must continue to replenish itself in a very small trough, only just wide enough to drink from.

1. An inverted bottle or tin makes a good supply tank:

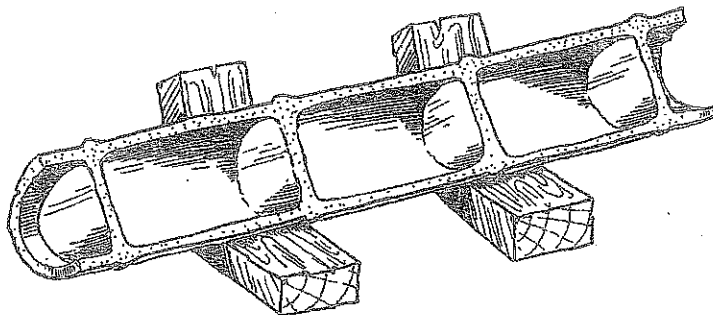




Water trough made from a split motor tyre



Trough made from split bamboo nailed onto boards. Note the sloping angle at which the bamboo is placed.



#### Important note

Feeder and drinkers must be cleaned regularly to avoid any risk of disease.

#### Feeding chickens

Like all animals, chickens need a balanced diet, throughout their lives.

a sufficient supply of each of the main foods:

- |                 |   |                  |
|-----------------|---|------------------|
| - protein       | - | body building    |
| - carbohydrates | } | energy foods     |
| - fats          | } |                  |
| - minerals      | } | protective foods |
| - vitamins      | } |                  |

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Chickens feeds supplied by millers are prepared with all these nutrients in them. The *proportions* differ according to the age and size of the bird for example:

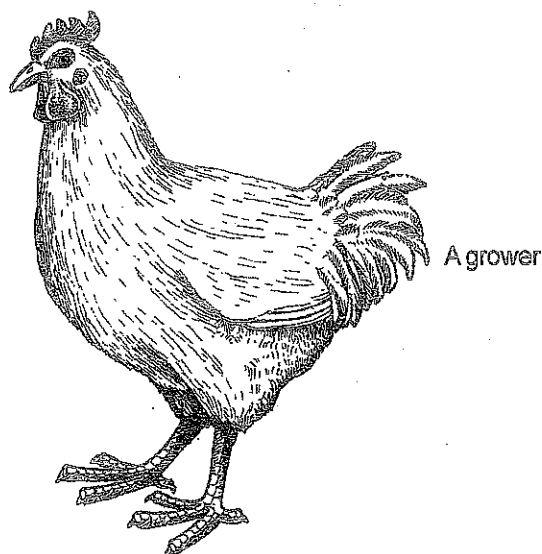
**Chicken starter mash**

This for chickens from one day old to five weeks. It is finely ground, so that young chick can eat it easily and it contains *plenty of protein minerals and vitamins* to build up flesh (meat) and bones.



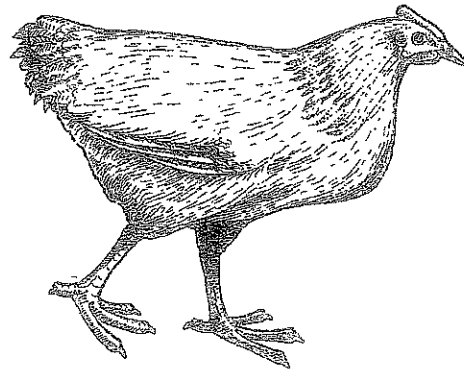
**Growing mash**

This is for hens from five weeks to point-of-lay (18 - 21 weeks). It has *slightly less protein* in it but *more carbohydrate* to provide the energy that active young babies need.



### Laying mash

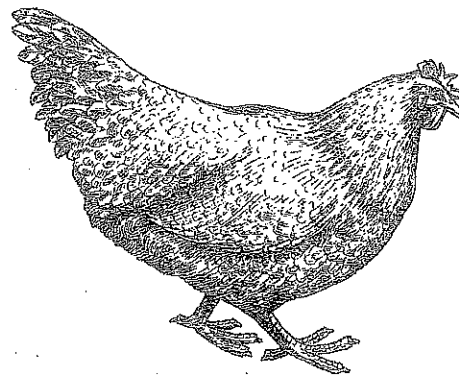
Is for hens that are producing eggs. It contains *plenty of protein and minerals* necessary for producing eggs and eggs shells. *Less carbohydrate* is included, because the birds are not so active and they should not be allowed to get too fat.



### Broiler mash

Is for birds bred for meat production. It is rich in protein and carbohydrate to provide the food materials needed for rapid *growth and energy production*.

A broiler



### Local food

Commercial chicken food should be supplemented with local food. Local food can also take the place of purchased food entirely, provided that the proper balance between the three food groups is maintained, as shown in the descriptions above (not the words in *italics*). Suggestions are given below.

#### Body building foods

Beans

Peas

Small animals (such as snails, insects, centipedes, worms and so on). These are normally found by the chickens themselves if they are free to wander around on the grass.)

---

### Energy foods

Coconut meat

Squeezed grated coconut

Root crops

Corn

### Protective foods

Green leaves, for example from manioc, kumala and kasis plants. (These may be tied together in a bunch and hung slightly above ground level so that they do not get dirty.)

Pawpaw (Plant a few pawpaws inside your chicken fence, so that when the ripe fruits fall they are there for the chickens to eat.)

### Water

Must be available to all chickens all the time.

It must be clean, fresh water.

Drinkers must be regularly cleaned.

A laying hen should never be without water.

### Grit

Small pieces of stones must be given to chickens.

This is swallowed and kept in the gizzard where it helps to grind the food.

### Egg collection

If chickens are being kept for their eggs, careful records must be kept of each hen's production in an egg record book. Appropriate measures must be taken with a hen which is not laying, as described in Section 5. Further help on money management is given in the booklet on this topic introduced in Year 7.

## Section 7

# Health and disease

### Teaching objectives

Upon the completion of this unit a student should be able to

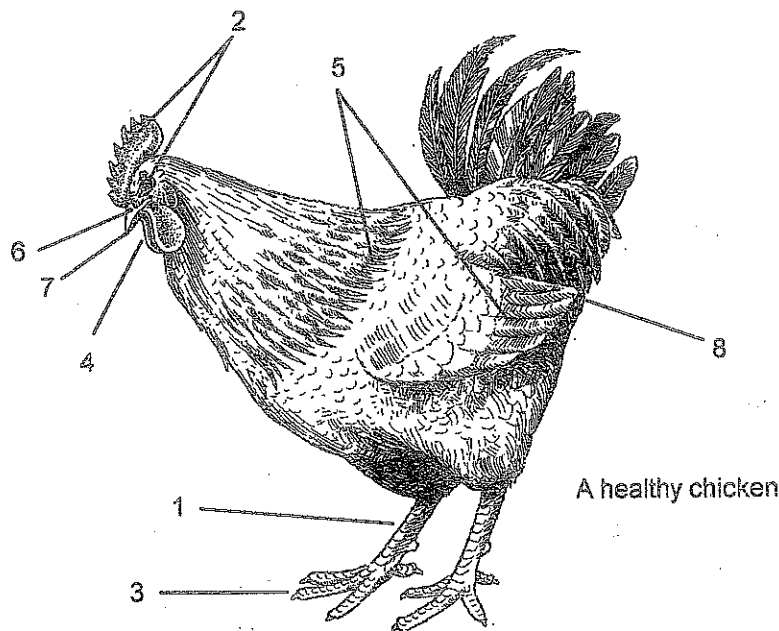
1. Identify at least five (5) important characteristics of a healthy hen.
2. Identify the symptoms of, and treatment for,  
(a) external parasites and (b) internal parasites.

### Prevention is better than cure

The value of one bird is small since a bird is short-lived. Therefore it is usually cheaper to cull - kill it and eat - if it gets ill. but even better to prevent illness in the first place by good care.

### Sign of health and disease

It is possible to tell when an animal is sick just by looking at it:



#### A healthy chicken

1. Looks alert and lively.
2. Has bright eyes and a red comb.
3. Walks normally.
4. Scratches the ground or litter looking for food.
5. Has smooth glossy feathers.
6. Breathes easily and quietly.
7. Eats well good appetite.
8. No blood in the droppings.

### An unhealthy chicken

1. Looks dull and miserable.
2. Has dull eyes and dull comb.
3. Keeps still and does not get up.
4. Does not look for food.
5. Has dull, rough feathers.
6. Makes snoring or coughing sounds as it breathes.
7. Has a poor appetite.
8. Has blood in its droppings.

### What to do to keep your chickens healthy

1. Look around carefully at all the birds if any are sick or lame or do not eat.
2. Control pests and diseases.
3. Record the number of eggs collected/sold and the work done everyday. If the number of eggs laid goes down rapidly, your chickens may have some infection.

If any of the chickens show signs of disease, it is best to kill them immediately, so that the disease does not spread among the rest of the flock.

### External and internal parasites

#### External parasites

The three types of external parasite (found on the bodies of chickens) are lice, ticks and mites.

#### a. Lice

These are the most common parasites. Their entire life cycle is spent on the body of chickens. They reproduce rapidly at about thirty thousand per female and can live up to three months. They spread by direct contact and die once they leave the chickens. They are about 3 mm. long, oval shaped and grey or yellow in colour.

#### The three types

- Body lice are found in areas like the vent and under the wings where the feathers are less dense.
- Head lice are greyish coloured and found around the head and neck regions.
- Shaft lice are found around the shaft of the feathers.

#### Symptoms

Constant irritation, scabs, ruffled feathers and death in some smaller chickens.

#### Prevention, cure and control

Ask advice from your nearest agriculture officer. He or she will be able to supply you with the insecticides you need.

#### b. Ticks

Ticks spend part of their life in the cracks of walls, roosts and wooden equipment. They suck blood and can spread tick fever, which can cause rapid death. They appear egg-shaped, sometimes flat. They are reddish-brown in colour and between 3 and 5 cm. long.

#### *Symptoms*

Loss of appetite and weight, and possibly anaemia (insufficient red blood cells).

#### *Treatment/cure/control*

As lice.

#### c. Mites

Mites are very small and almost invisible. There are many known species. Some stay on the chickens while some attack at night.

#### *Symptoms*

Signs are specific to the type of mites

- Scaly leg mites (on legs) - legs swell, appear scaly and crusted
- Red mites (nocturnal) - loss of weight and anaemia.
- Depluming mites (on base of feathers) - feathers pulled out due to intense itching.

#### *Treatment/prevention/cure*

There is no treatment for scaly leg mites. For the others, see under Lice.

### Internal parasites

All internal parasites are worms and are spread through eating infected faeces or a through a variety of intermediate hosts eaten by the chickens, including snails, slugs, earthworms, flies, cockroaches, grasshoppers and other insects. Worms are round or flat shaped. The largest type is a thick white worm 3.5 cm to 7.5 cm long.

A female worm can produce about 5,000 eggs per day, which are excreted with the faeces. These eggs can live in litter for months before hatching. The eggs are swallowed by chickens, the larva hatches, burrows into the intestines, grows, matures, lays eggs and the cycle begins again.

#### *Symptoms*

- Depressed appetite
- Diarrhoea, often yellow in colour and frothy
- Pale comb (anaemia)
- Drooped wings, ruffled feathers and general weakness

#### *Treatment/prevention/cure*

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Good sanitation in the chicken house is the best solution. Each worm requires a different drug for control. Ask the advice of your nearest agriculture officer.

### Vices (bad habits) of chickens

- a. **Egg pecking**
  - Chickens eating their own eggs
  - \* Cure by collecting your eggs regularly  
OR  
Cull the bird that is eating eggs
  
- b. **Cannibalism**
  - Chickens peck each other so much that bleeding or even death can occur.
  - The vice is made worse by overcrowding or lack of food or water or an open wound on a bird which others can see.
  - \* Cure by providing enough room for each bird, giving enough food and water and isolating wounded birds until their sores are healed.



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## Section 8

# Breeds and improvement of stock

### Teaching objectives

Upon completion of this unit the student should be able to

1. Identify the different types of breed present in Vanuatu.
2. Identify the characteristics required in good breeding stock.
3. Suggest simple ways to improve the stock of chickens raised in the village.

### Different breeds of chickens in Vanuatu

1. Wild breed (jungle fowl)
2. Egg-laying breed (layers)
3. Heavy breed (broilers)
4. Dual-purpose breed
5. Cross-breed (hybrid)

#### 1. Wild Breed

Breeds only once a year. Lays a clutch of up to 22 eggs, then sits on them to incubate them.

It than broods for as long as necessary until the chicks are independent.

From this breed have originated many different types of poultry with specific characteristics purposes.

From this wild breed we get:

- egg laying fowls
- heavy fowls
- dual-purpose fowls
- cross-breeds by selective breeding with other breeds

#### 2. Egg-laying breed

These lay most eggs but don't fatten well to make much meat.

They are rarely broody and make poor sitters.

They tend to be excitable.

examples: White Leghorn

## Black Leghorn

### 3. Heavy Breeds

These birds may not be such good layers, but have more meat. They are less excitable, and make good mothers.

Example: RIR (= Rhode Island Red)

### 4. Dual-purpose Breeds (Dual means Both)

These have a combination of the characteristics layers and broilers.

Example: LS (Light Sussex)

### 5. Cross-Breeds (Hybrid)

This is the name given to chickens whose parents are of different pure-breeds.

Example: RIR cock x LS hen

Hybrids are

- a. hardier, stronger, more resistant, with better meat & eggs
- b. more vigorously resistant to climate conditions and to pests and diseases
- c. more productive than their pure-breed parents.

Pure-breed x Pure-breed = Hybrid

Hybrid x Hybrid cannot be done, this will result in a very weak product. For this reason, hybrids themselves are not used for breeding and so their eggs are used only for eating.

## Improvement of stock

Most local fowls provide very few eggs in a year and only give a carcass. Remove the legs, feathers and intestines and there is very little meat left on it.

Improvement is possible on this lines:

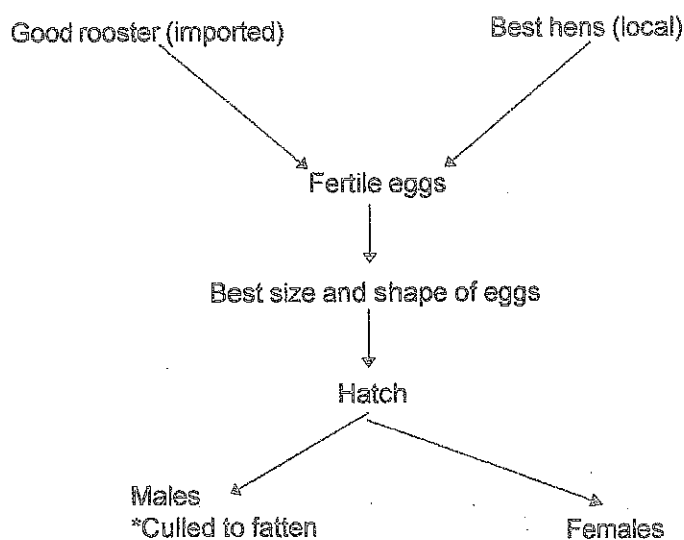
1. Better feeding
  2. Better management
  3. New blood
  4. Better breeding
  5. Cross-breeding
1. Better feeding  
Feeding is done with rations worked out according to the exact requirement for maintenance and production of meat and eggs.  
See the section on feeding.
  2. Better management
    - a. Regular feeding and watering
    - b. Keeping houses and runs clean

- c. Control and treatment of pest and diseases
- d. Keeping records

### 3. Better breeding

- a. Selection and culling of stock is done regularly.
- b. Only the best birds are preserved for breeding.
- c. Only good roosters are allowed to run with the hens.
- d. Roosters and hens not needed for breeding are separated, allowed to fatten and sold or slaughtered.
- e. Eggs for hatching must be of the right size and shape and of the selected breed for the area.
- f. Only eggs from hens which lay well should be hatched.

#### A breeding plan



### 4. New blood

It is good to introduce new stock into the flock.

Example:

A RIR rooster brought in from outside can greatly improve the existing stock.

### 5. Cross-breeding

If an *introduced* improved breed such as the R.I.R is bred with the local hens, the disease resistance and hardiness of the local hen is combined with the greater weight, speedier growth and bigger egg production of the imported breed.

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RIR Cock

x

Local Hen

1. greater weight
2. speedier (quicker) growth
3. bigger egg production

1. hardy
2. disease resistant



HYBRIDS

## Secton ~~10~~ 9

# Different management systems

### Teaching objectives

Upon completion fo this unit the student should be able to

1. Describe systems of management based upon the use of
  - (a) simple nestboxes
  - (b) poultry houses made of bush materials
2. State for each how poultry kept in this manner would be more productive than poultry kept in a traditional village system.
3. Describe a system of intensive management based upon the use of a battery house, and give reasons why this system is not widely used in Vanuatu.

### Systems of management of chickens

1. Extensive
2. Semi-intensive
  - a. house and run
  - b. movable fold or ark
3. Intensive
  - a. deep litter
  - b. battery

#### Extensive

- The chickens are not restricted in any way.
- They can wander in the field as they like. There should be a house for roosting at night and for laying eggs

These are common in villages in Vanuatu.

#### Advantages

- a. No overcrowding.
- b. No expensive wire netting, etc..
- c. Chickens have plenty of exercise.
- d. Lower food costs as they obtain grass, weeds, kitchen wastes freely.

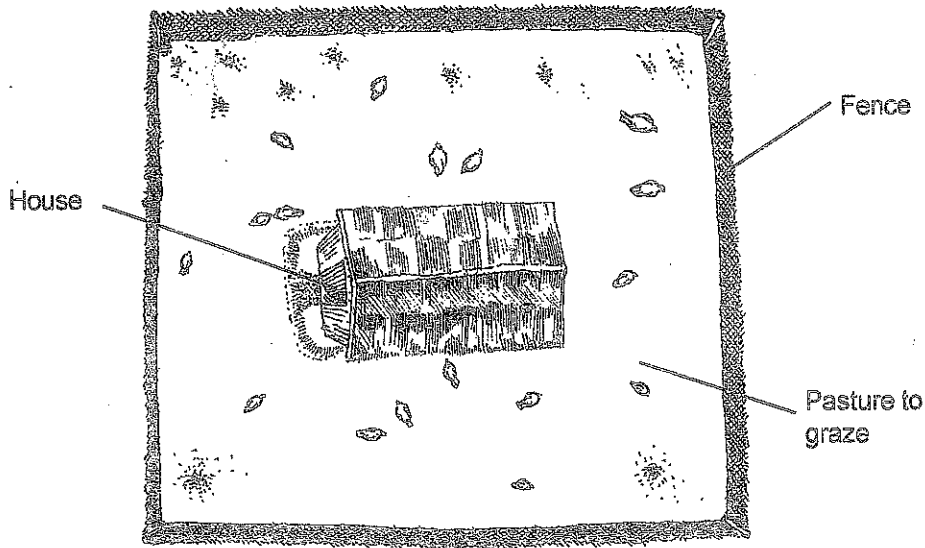
#### Disadvantages

- a. Close supervision is not easy.
- b. Eggs may be laid all over the place.
- c. Chicken may get into crops and spoil them.
- d. Easy prey to wild animals (dogs, cats and pigs).
- e. A breeding policy is not easy unless roaming roosters are kept away.
- f. Diseases can be easily caught from other flocks.

## Semi-Intensive

The birds are restricted in movement. This means that can be better managed and the disadvantages of extensive management are removed.

### a. House and Run

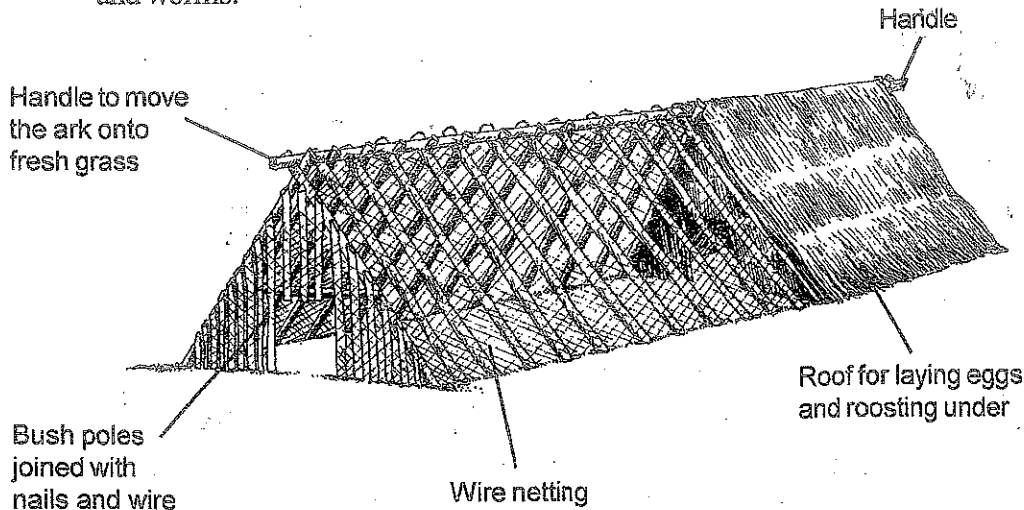


This consists of an enclosure in wire-netting with a roofed house for laying and roosting.

The chickens graze and look for food in the pasture but they must also be given food and water.

### b. Moveable fold or ark

The ark can be moved onto fresh ground every few days, so that the chickens inside can graze and find some of their own food in the form of grass, insects and worms.



### iii. Intensive methods

These two intensive methods are not used much in Vanuatu. They are normally used for commercial businesses where chickens are reared in large numbers for their meat or eggs.

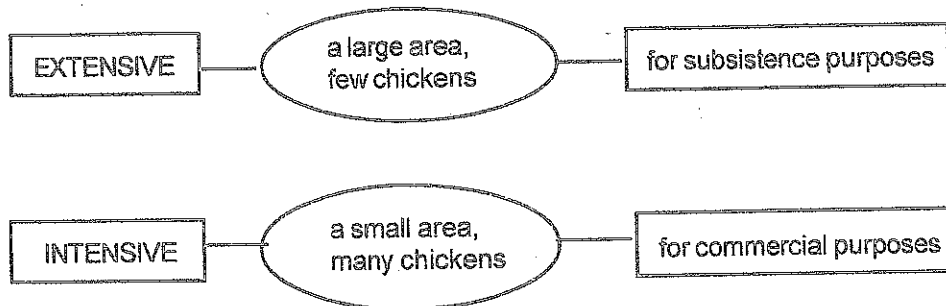
#### a. Deep litter house

1. Many birds, up to 500, are kept in the house.
2. The house is equipped with feeders, drinkers, laying boxes and roosts.
3. Chickens move about within the house. They do not go outside.
4. The floor is covered with litter made of dried grass, sawdust, wood shavings, etc.
5. The litter is stirred regularly and more is added on top. The litter heats up as a compost heap and destroys disease organisms.
6. Once a year the litter is removed and used as compost. It is replaced with fresh litter.

#### b. Battery system

1. Each bird has a little cage for itself for the whole laying period.
2. The floor is sloping slightly so that when the egg is laid, it rolls down into a wire trough.
3. Food is given in feeding troughs fitted outside the cages. The chickens can put their heads out and feed.
4. Water and medicine are given automatically to the chickens.

To summarise:







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