

KAI KOKORAKO

**Keeping chickens for income and
food in the Solomon Islands**

Training tools for Pacific Island communities



Russell Parker

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Pacific Island Communities

Kai kokorako
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food in the Solomon Islands



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2004

Kai Kokorako

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Preface

This training manual has been written for agricultural extension workers, government field officers and non-government organisations training staff.

The purpose of the manual is to serve as a guide for training villagers in methodical kokorako keeping to:

- improve diets and the nutritional health of families
- set up a kokorako system as a small business.

The book is based on the work of Russell Parker, an Australian poultry expert with experience in the Solomon Islands.

Russell Parker

Tenterfield, NSW, Australia.

Russell Parker has been interested in Pacific Islands poultry-keeping for years.

He came to the Solomon Islands in 1968 to work for the Commonwealth Bank in Honiara. Friendships made with local people at that time brought him back to the Solomons in 1990.

His book on the life of Nathan Kera, chief of the Saikile people of Roviana Lagoon, was published in 1994.

At that time, Russell started to make use of his knowledge of poultry-keeping to help village people. He arranged for the importation of chickens and ducklings to the Tenavatu Government Farm to improve local breeding stock. The imported stock was distributed throughout the Solomons.

Training in improved poultry-keeping started in 1997/ 1998 with workshops at the Kastom Garden Programme's Burns Creek centre in Honiara.

Now retired from banking, Russell plans to spend time working with Solomon Islands people to improve their lives.



Kokoroko manual— background:

- Creating a small kokorako business
 - Purpose of the manual
 - Structure of the manual
-

Creating a small kokorako business

These workshops provide training in the raising of chickens (known as kokorako in the Solomon Islands) in villages to provide better food, fertilise gardens with waste from the chicken yard and provide cash income from the sale of surplus chickens and eggs.

Nearly every village has a few chickens wandering around but they are usually not cared for by their owners. If the chickens were kept in a special house and given a balanced diet every day they would supply more eggs and breed more chickens to eat or sell.

Sometimes, imported chickens are available but they may cost too much to buy and some need expensive, imported food.

Village and imported chickens can be bred together and fed on local foods such as fruit and vegetables, coconut, copra, fishmeal, corn, sorghum, rice and sweet potato.

A kokorako small farming business

A kokorako business:

- can be owned and operated by the local community with little outside support
- produces almost immediate results, encouraging participants to continue with the business
- produces good quality breeding stock and more eggs
- ensures a higher survival rate for the birds
- opens opportunities to investigate the use of bush medicines for the chickens
- uses fishing to contribute protein (body-building food) to the kokorako feed
- uses garden waste in the kokorako house instead of burning it or throwing

it in the sea; later, the manure and composted material from the chicken house can be used to improve the garden soil

- preserves wildlife when a regular supply of kokorako meat and eggs is available, reducing the need to hunt wild kokorako and other birds and animals
- creates business opportunities, including the sale of surplus eggs to food outlets and retail businesses and kokorako for breeding.

Expanding the kokorako business across the country and to other island nations may provide training and employment opportunities.

Suited to difficult conditions

Because only a small area is needed, a kokorako business is suited to overcrowded or small islands.

Poor quality sandy or rocky soils can be used to build the kokorako house and yard on.

Kokorako manure can be mixed with poor soils so you can grow more kokorako food and food for the family.

In the Solomon Islands, on the island of North Malaita, there is a kokorako project in which the kokorako are housed in the mangroves in a platform house raised above the ground. Their diet is white ants. Those kokorako would produce better and be healthier with just a few fruit, vegetables, dirt, gravel and greens too.

Purpose of the manual

Purpose

The sessions outlined in this manual will help extension workers from both government and non-government organisations introduce methods of sustainable raising of chickens in villages to provide:

- better food and nutrition
- cash income from the sale of surplus chickens and eggs
- fertiliser for gardens with waste from the chicken yard.

Training session outline

In this manual you will find session outlines that will assist you to organise workshops.

A seven stage process

The sessions are divided into seven sections and include:

1. Introduction

1. Introductions
2. Participants define expectations
3. Introduction to kokorako-keeping
4. Village assessment

2. Breeding

5. Selecting hens for breeding
6. Differences: roosters and hens
7. Eggs: parts, benefits & egg laying

3. Care and management

8. Improving kokorako keeping
9. Understanding kokorako
10. Keeping kokorako healthy
11. Common insect pests & predators
12. Catching and carrying chickens
13. Feathers and wing cutting
14. Marking breeding kokorako
15. Everyday activities
16. Quiz

4. Feeding kokorako

17. Good food for kokorako
18. Free choice feeding
19. Feed quantities: young and old
20. The digestive system
21. Quiz

5. Housing

22. Types of kokorako houses
23. Preparing to build
24. Field visit
25. Designing kokorako houses
26. Quiz: housing kokorako

6. Incubation and hatching

27. Broody hens
28. Nests
29. Storing eggs
30. Hatching eggs artificially
31. Artificial brooding of chickens
32. Quiz: incubation and hatching

7. Making use of kokorako

33. Eat kokorako—preserve wildlife
34. Mulching gardens
35. Quiz: making use of kokorako
36. Self assessment

Structure of the manual

Each training session contains a number of sections:

- **outcomes** – what knowledge or skills the participants will be able to demonstrate after finishing the session
- **key message** – the main points to get across to participants during the session
- **approach** – how to pass on the information to participants; this may be through explanation, demonstration and by participants practising the skill; where all three methods are used, start by explaining the subject, then demonstrating the skill, after which participants practice the skill by copying what the facilitator has demonstrated
- **materials** – a list of materials needed by the facilitator to complete a demonstration and/or for participants to carry out practical work
- **procedure** – a sequence of steps to follow for the training session.

Training sessions may provide **handout sheets** for photocopying and handing out.

The sessions may involve:

- **meetings** where discussion takes place and where methods of kokorako keeping are described and demonstrated
- **visits** to farmer's kokorako houses to identify and see kokorako keeping techniques
- **quizzes**; a set of questions that may be used to reinforce what has been learned in the training sessions and to check that participants have understood the training session content.



Introduction:

This section contains lesson outlines to assist you to organise workshops:

1.	Introductions.....	6
2.	Participants define expectations.....	7
3.	Introduction to kokorako-keeping.....	8
4.	Village assessment.....	14

1. Introductions

Outcome

At the end of this session, workshop participants will have been introduced to each other and to the facilitators.

Key messages

Participants work together better when they know each other.

Approach

After the official opening, participants introduce themselves.

Facilitators introduce themselves after the participants.

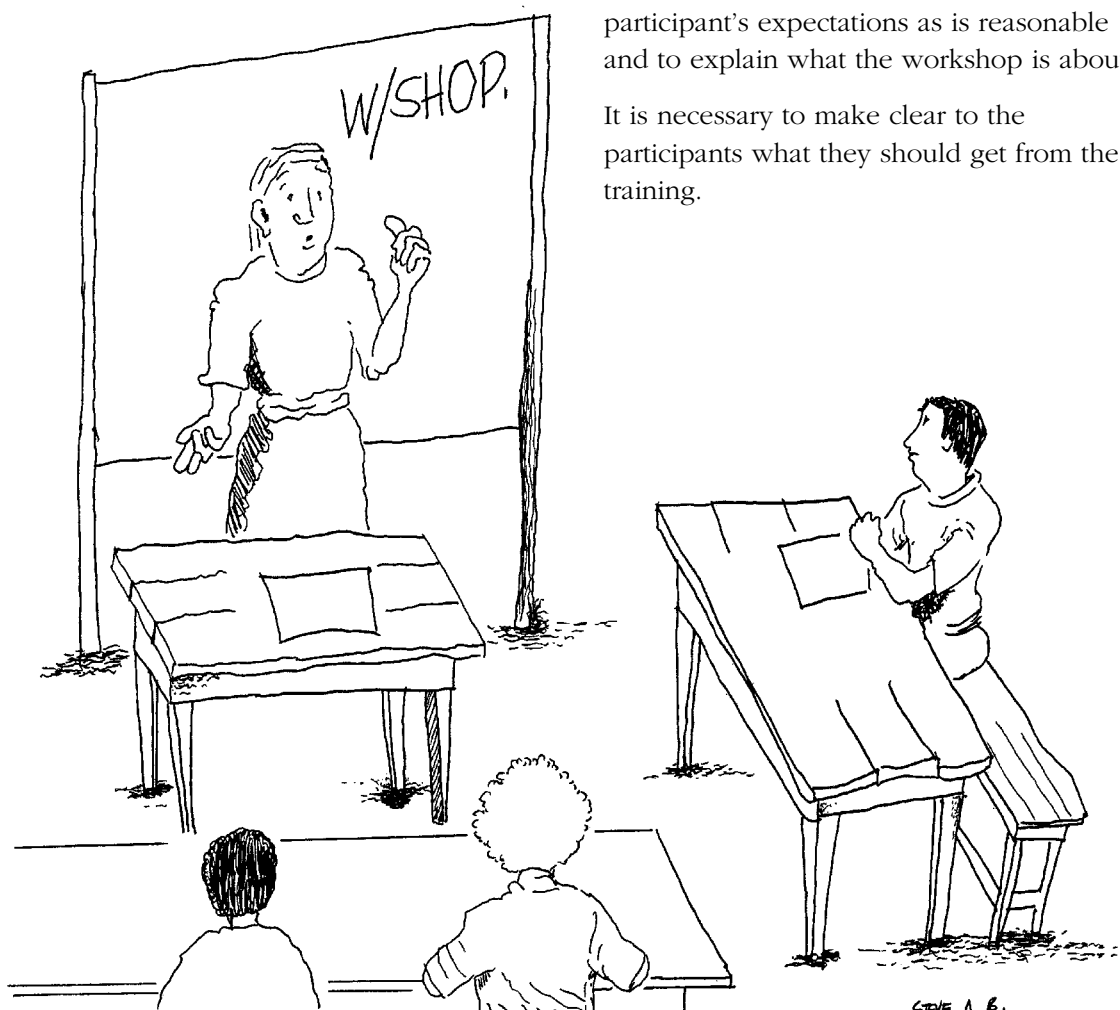
Procedure

1. Break the group into pairs
2. The pairs get to know each other— 10 minutes
3. Each person introduces their partner and what they learned during the getting-to-know period.

The first day of a training workshop is a time when participants get to know each other (if they do not do so already) and the trainers and to clarify what they hope to get from the training.

For the trainer, it is a time to listen carefully, plan to accommodate as many of the participant's expectations as is reasonable and to explain what the workshop is about.

It is necessary to make clear to the participants what they should get from the training.



2. Participants define expectations

Outcome

At the end of this session, workshop participants will have made a list of their expectations for the workshops.

Key messages

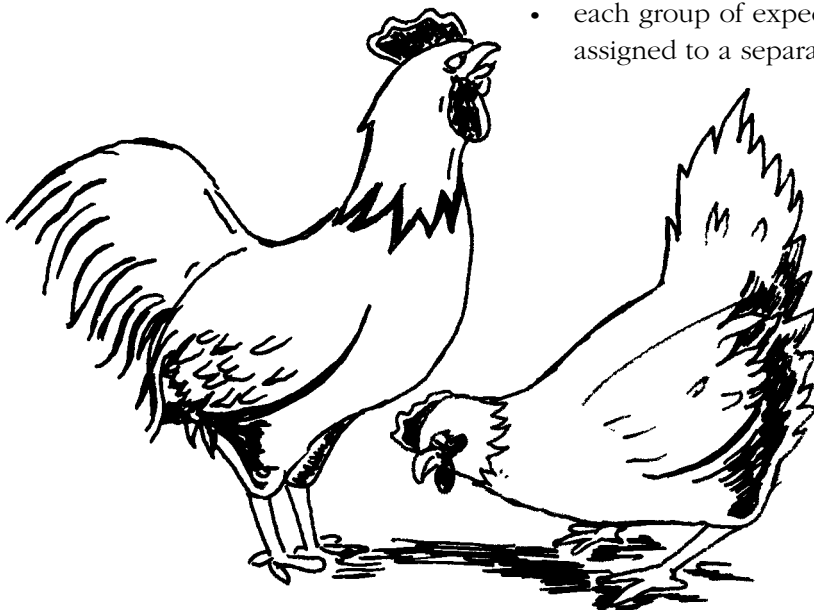
Participant expectations are most likely to be met when they have been clarified and explained.

Approach

Participants identify, clarify and discuss their expectations of the workshop.

Procedure

- 1. Facilitator explains** to participants that:
 - the workshop will be adjusted to accommodate as many of their expectations as possible within time and resource limits
 - it may not be possible to cover some expectations in the workshop
- 2. Hand out** three to five cards to each participant and asks them to write or draw a picture of one of their expectations on each card
- 3. Participants explain** the expectations on their cards to the group
- 4. Facilitator sticks cards on a board**, trying to group them according to common expectations
- 5. Facilitator summarises** the expectations presented
- 6. The workshop then takes a break.** During the break the facilitators:
 - select the groups of expectations they can cover in the workshop
 - allocate time to each on a workshop timetable
 - each group of expectations is assigned to a separate day.



3. Introduction to kokorako-keeping

Outcome

By the end of this session, participants will be able to:

- describe the two kinds of kokorako found in the Solomon Islands
- explain the difference between roosters and hens
- list 10 terms used in chicken-keeping
- explain the benefits of keeping kokorako.

Key messages

1. It is easy to learn to keep chickens.
2. Families can set up a chicken house and yard and breed chickens in the village.
3. Eggs and kokorako meat improve the family diet by contributing protein foods.
4. A small business can be started by selling surplus eggs and kokorako.
5. It is important to know the characteristics of hens and roosters to help:
 - determine if the chickens are healthy
 - with breeding.
6. Understanding terms will help in discussing chicken keeping.

Approach

...discuss

- describe the two kinds of kokorako available in the Solomon Islands
- brainstorm – what are the benefits of keeping chickens.

Materials

...for discussion

- pictures of different kinds of kokorako
- bring a live rooster and hen to identify their parts
- hand out a list of chicken keeping terms.



Procedure

1. The trainer introduces the kokorako workshops and explains that they are about improving the raising and keeping of kokorako in villages and the benefits of this:

- improved diet
- compliment to food gardens
- provide cash income from the sale of surplus chickens and eggs.

The trainer lists the six main sections that will be covered in the series:

- breeding
- care and management
- feeding
- housing
- incubation and hatching.
- making use of kokorako.

The trainer describes that this first training session outlines the main points about keeping kokorako.

2. Explain the two kinds of kokorako available in the Solomon Islands:

- the common village variety which lay eggs and can be eaten but which do not produce a lot of eggs or have much meat on their bodies; if we feed them well they will grow better than they do when left to forage in the village
- special breeds usually imported from Australia or New Zealand, which produce more eggs and meat.

3. Demonstrate the different parts of a rooster and hen using live birds. Discuss the differences.

4. Explain each term in the glossary, using pictures. Explain that understanding these terms helps with learning to care for village kokorako.

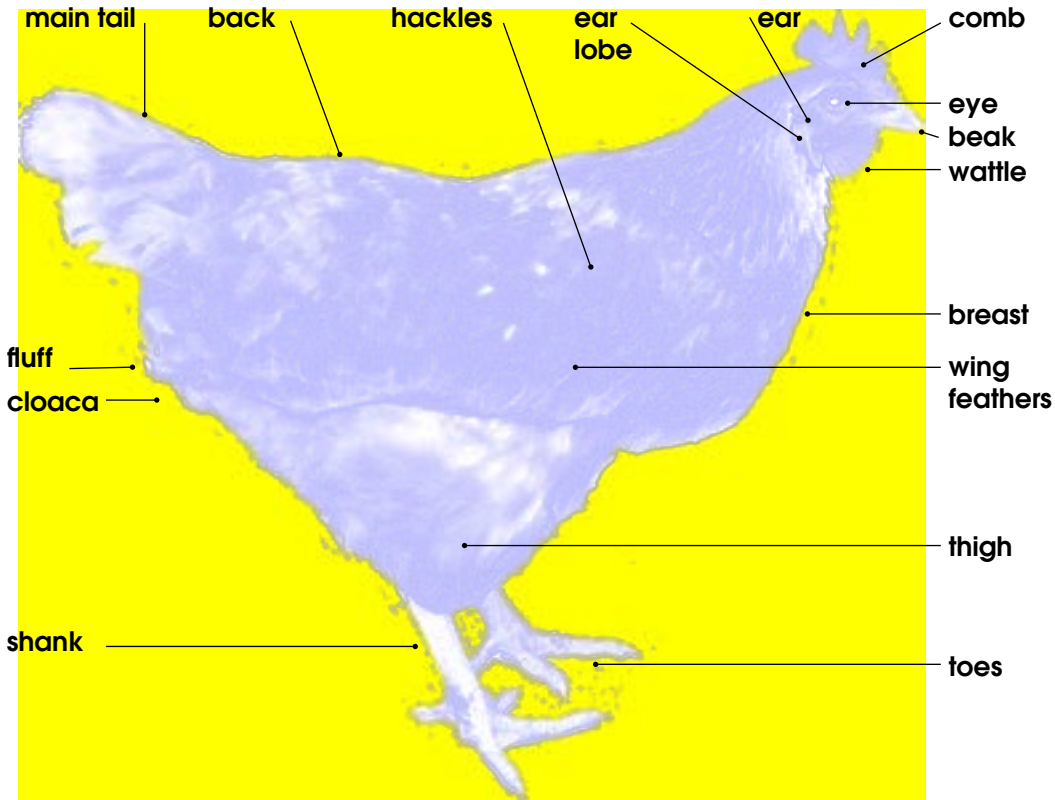
5. Ask the participants what are the benefits of improving the keeping of kokorako in the village eg:

- better diet; kokorako meat and eggs provides body building food (protein) which with energy food (carbohydrate) and protective food (vitamins and minerals) provides a balanced diet and nutritional health
- raising extra kokorako to produce surplus eggs and meat for sale at market by improved feeding and housing
- use of kokorako wastes to improve soil fertility in the garden to grow healthy and productive crops.

6. Summarise: the way that kokorako are usually kept in the village is less productive. Village kokorako spend much time breeding and raising chickens rather than laying eggs.

If we improve the way we keep kokorako we can enjoy better nutritional health, produce more eggs and start a small business by selling eggs and kokorako at market.

Parts of a hen

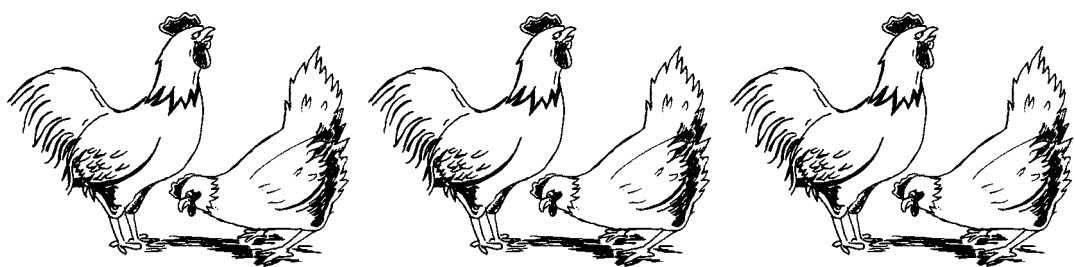


Parts of a rooster



Chicken keeping terms

Term	Definition
Bantam	Usually refers to miniature fowls. Many village fowls are almost bantam size
Birds	Another term for chickens or poultry
Broiler	Young chickens specially fed and housed for meat production
Brooding	Raising of chickens from hatching until they have their own feathers, either under a mother hen or artificially with a lantern or electric light bulb for warmth at night
Broody	Hen is ready to sit on eggs to hatch them
Camouflage	Difficult to see or find by blending into the colours or patterns of the background
Chicken	American term for fowl or hen. English/Australian term for young fowl from hatching until approximately 8-10 weeks of age, when the sex of the chicken are known and they are referred to as cockerel or pullet.
Cloaca	The large opening at the end of the intestines where the droppings or manure comes from
Clucky	A hen that is ready to sit on a nest of eggs to hatch them
Clutch	A group of eggs laid by a hen
Cockerel	Young male fowl to 12 months of age
Cock	Male fowl over 12 months of age
Compost	Stored vegetable, leaf, and tree matter specially gathered to mix together while rotting to place on gardens to improve soil. Called 'sapa' in some parts of the Solomon Islands
Culling	Selecting unwanted animals from a group to kill for meat or sale
Droppings	Manure or waste from the chicken's body
Feral	Any domesticated bird or animal that has escaped or allowed to run wild
Flock	A group of birds or poultry
Forage	The hen searches for insects, grit and greenfood
Free choice	Different foods are supplied separately so that fowls can choose what they need
Free range	Poultry are allowed to wander



Chicken keeping terms (continued)

Greenfood	Green vegetable, leaf and grass are important parts of poultry diet
Grower	A person who grows chickens
Hen	Female fowl from 12 months of age
House	A shelter especially made for poultry
Husbandry	The care and management of animals
Hybrid	The crossbreeding of plants, birds or animals for a particular purpose. eg. kokorako specially bred for meat or egg laying
Incubation	The hatching of eggs either under a hen or artificially
Jungle fowl	The original wild species of fowl called Santa Cruz fowl in the Solomon Islands where it still lives freely
Kai	Solomon Islands Pidgin for 'to eat; or 'food'
Kokorako	Solomon Islands Pidgin for 'chicken' or 'fowl'
Manure	The waste or droppings from a chicken
Pen	See house or cage
Perch	Horizontally placed sticks in a poultry house that allow the birds to roost off the ground as they would if they lived in the wild
Poultry	Chickens, fowls, geese, ducks, turkeys etc are all poultry
Predator	Any bird or animal, which preys on another
Pullet	Hen to 12 months of age
Roost	The natural instinct of fowls to sleep up in branches of trees. This is artificially provided in pens and is also called a perch
Rooster	Male fowl over 12 months of age
Santa Cruz fowl	See jungle fowl
Set	Natural process of a hen sitting on eggs until they hatch (see also Clucky)
Setting	Can mean a collection of eggs ready to be hatched or actually sitting on the eggs
Sitting	As above
Stock	Collection of animals such as poultry
Strain	Various breed varieties or different breeding backgrounds
Unit	Group or collection
Vent	Hole at the back of the kokorako where the waste comes out, eggs are laid and where the sex organs are located
Waterfowl	Poultry such as ducks and geese, which prefer to live on or near water
Yard	Fenced areas to hold animals



4. Village assessment

Outcome

By the end of this session, participants will be able to:

- list their findings of the village assessment.

Key messages

1. Completing a village assessment provides information to help participants improve kokorako keeping in the village.

Approach

...discuss

- participants complete village assessment checklist in small groups, it may be useful to have women and men in different groups to encourage women to participate
- explain kokorako-keeping terms.

Materials

...for discussion

- hand out village assessment checklist; break into small groups to complete checklist; groups report back on their findings, trainer writes information on blackboard or flipchart and reconciles differing findings.

Procedure

1. Review the benefits of improved kokorako keeping in the village.

2. Form small groups to walk round the village to complete the village assessment checklist.

Review checklist and ask:

- what things are needed for kokorako-keeping that are lacking in the village?
- how can we provide the things we need to improve kokorako-keeping in the village?

3. Summarise by having the students form small groups to answer these questions:

Question	Answer
Give the three main reasons why it is necessary to improve kokorako keeping in the Solomon Islands	<ul style="list-style-type: none"> • to improve family diets • to produce waste materials useful as garden fertilizer • to create small business opportunities.
What do chickens need to grow healthy and safe?	<p>Proper feeding and clean water every day.</p> <p>To be kept safe in their own house.</p> <p>To have properly organised breeding for better results.</p>
Explain some differences between roosters and hens	See illustration on following pages
Select ten different terms — ask students to explain them	See Terms

Village assessment checklist

Compile information to assess the capacity of your village to build and maintain an improved kokorako system.

Number of kokorako

How many kokorako are in the village? _____ How many families keep kokorako? _____

How many of the kokorako are hens? _____ How many of the kokorako are roosters? _____
(Only one rooster is needed for ten hens. There are usually too many roosters competing for the hens)

Are there already enough kokorako to start a chicken-keeping project? _____

Do you think your adult kokorako are too old to produce eggs? _____

How many hens have chickens? _____

How many chickens does each hen have? _____

(There will most likely only be one or two survivors from a batch).

Type of kokorako

What colour are the chickens? _____

(This will usually indicate whether they are imported or local)

Are the chickens of the imported variety? _____

Are the chickens old or young? _____

Eggs and hatching

Do you know of any nest where a hen is sitting on some eggs? _____

How many eggs does she have? _____

Do the kokorako produce enough eggs and meat for the whole village? _____

Is it easy for you to find eggs that your hens have laid? _____

(It is easier in a proper kokorako house)

How many eggs does a village hen usually lay? _____

Village assessment checklist (continued)

How long does it take for those eggs to hatch into chickens? _____

How many chickens usually hatch under each hen? _____

How many survive from that clutch to grow up? _____

Do you know why only one or two chickens survive? _____

Do you notice when some chickens are sick? _____

Feeding

Does someone give proper food to your village kokorako? _____

Does the hen with the new chickens get special food for her babies to eat? _____

Predators

Do you notice if cats, dogs, hawks or snakes kill your chickens?

Breeding:

This section contains lesson outlines to assist you to organise workshops:

5.	Selecting hens for breeding	18
6.	Differences: roosters and hens	20
7.	Eggs: parts, benefits & egg laying	23

5. Selecting hens for breeding

Outcome

By the end of this session, participants will be able to:

- describe and identify desired characteristics of a hen
- list four general features you look for when choosing hens for a breeding flock.

Key messages

1. Choose breeding stock carefully to produce a more productive flock.
2. For successful breeding you need good quality eggs which come from well-cared-for chickens.

Approach

...discuss

- identify desirable characteristics of hens for your flock
- brainstorm desirable features of breeding stock.

Materials

...for discussion

- a demonstration hen with the desired characteristics

Procedure

1. **Review** the two kinds of kokorako available in the Solomon Islands (from a previous session).
2. **Introduce this session:** we will discuss the best characteristics to look for in choosing a breeding flock.

3. **Identify** the desirable characteristics when choosing a hen for your flock. Use the demonstration hen to show these characteristics:

- open alert eyes
- always watching for predators such as cats, dogs and hawks
- finding food easily
- strong beak
- to protect itself and its chickens
- for finding food
- strong legs and feet
- for scratching and finding food
- tight feathering
- tight feathers are better in the hot weather of the Pacific islands than the fluffy imported chickens which feel the heat and need to drink more water
- compact body
- needs less food and can fly easier to escape danger.

4. **Explain** the need for both imported and village hens for a successful flock:

- the imported hens are best for egg and meat production
- the village hens are best as broody hens

5. **Brainstorm** the desirable general features you would look for when choosing hens for your breeding flock:

- very active
- search for their own food
- strong and healthy young fowls
- good egg layers
- good as broody hens.

6. **Summarise** a hens desired:

- characteristics
- general features.

Breeding kokorako

Breeding our own chickens makes us self-reliant and saves money because we do not have to buy young chickens from other breeders.

It is important to select a suitable flock of breeding fowls to suit your village needs.

We can quickly build up the number and quality of the local poultry through selective breeding, correct feeding and captivity.

Number of chickens for a family or village

Depending upon the size of the family or village, you can start with five to ten hens and one rooster.

It is a good idea to keep both village and imported hens together. The village hens will provide the necessary broody hens through the year and the imported hens will lay more eggs. A mix of village and imported will suit a large extended family or small village.

Imported breeds have been available for many years so it is not necessary to import more. If they are given better feeding and management the local village fowls can produce good results almost immediately.

Keeping the kokorako in pens for most of the day, feeding them properly and breeding correctly produces better results.

Village kokorako

Village hens have become smaller over the years because they have been allowed to wander freely and to breed with little care.

Good feeding and management of village fowls will produce better meat and eggs.

Village fowls are a smaller, more compact breed so they do not eat as much as larger imported fowls but still produce lots of eggs.

Females from the improved breeding line will be broody hens and very protective mothers.

The present village fowl is a very active forager and it also shows great interest in any food scraps thrown to it. Therefore it will adapt well to the proposed free choice feeding system of local feeds.

Because of their tight feathering and more active nature, village fowls can be more successful breeders than many imported fowls and usually continue to breed to a greater age.

Cross-breed with imported varieties

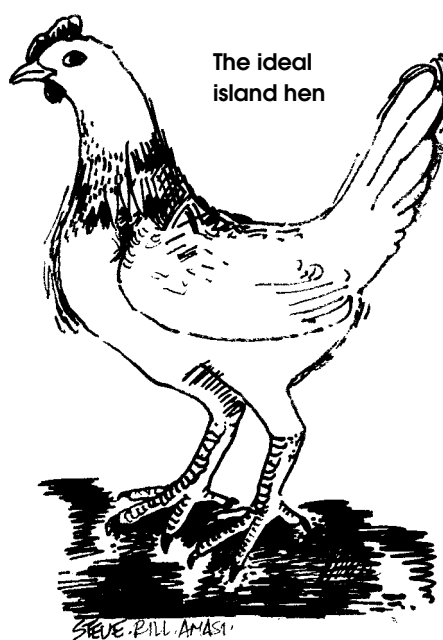
It is a good idea to crossbreed the village fowls with imported varieties to produce a mix of the good qualities of both.

Imported kokorako have bigger bodies and lay more eggs. These good points are passed on to your cross-bred kokorako.

The cross-bred poultry will breed to the natural feather colours of the jungle fowl. This provides camouflage from predators, especially for nesting females. The natural brown striped colouring of the chickens from the moment of hatching is also good camouflage.

In selecting chickens for the village flock you should look for qualities such as:

- open, alert eyes
- strong beak, legs and toenails for foraging for food.



The ideal island hen

6. Differences: roosters and hens

Outcome

By the end of this session, participants will be able to:

- identify the internal male organs
- list two differences between hens and roosters.

Key messages

1. You must always have a healthy rooster with your hens to make sure you get good quality fertilised eggs for breeding.
2. The rooster, which is with the breeding hens, should be young and healthy so he does a good job of guarding the hens and fertilising their eggs with his sperm.

Approach

...discuss

- identify male organs and differences between rooster and hens.

Materials

...for discussion

- a dissected rooster or illustration of internal male organs
- a demonstration rooster and hen.

Procedure

1. **Introduce this session:** we will discuss the insides of a rooster and look at the differences between a hen and a rooster.
2. **Explain** that the male chicken is called a rooster or cock and the female chicken is called a hen.

3. **Identify** the internal sex organs of a rooster, using a dissected bird if available or a large illustration.

- inside his body are two pale yellow organs called testes; these make a fluid called semen
- the semen contains many small things called sperm; these join with an egg and make it grow into a chicken.

4. **Explain** the differences between roosters and hens:

- the differences between adult roosters and hens are easy to see; males are larger and may have more elaborate feathering and colouring
- it is difficult to tell the sex of baby chickens because their sex organs are very small and located inside their body
- you have to look closer at growing chickens to be able to tell the males from the females.
- the young roosters (cockerels) grow faster than their sisters

Combs:

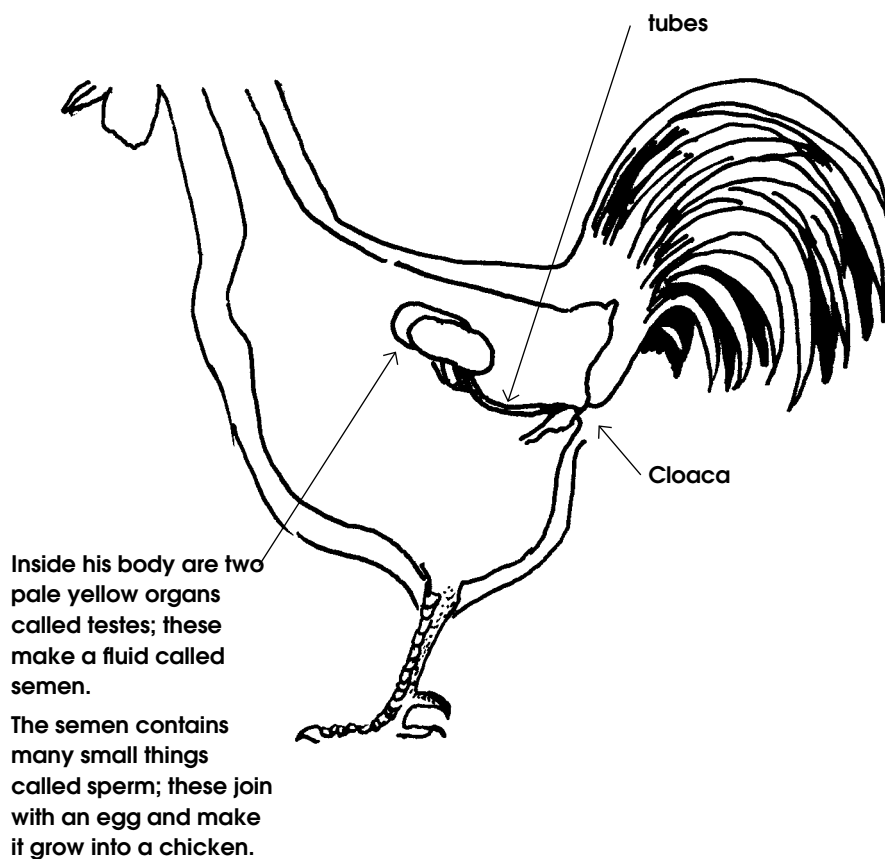
- point out young chickens that are developing combs and wattles
- explain that the young hens (pullets) are much slower to develop their combs

Feathers:

- cockerels might show brighter colours in their feathers
- young pullets might grow plain-coloured feathers.

5. **Recap** the importance of having healthy roosters and hens in your breeding flock.

The rooster — the male organs



You must always have a healthy rooster with your hens to make sure you get good quality fertilised eggs for breeding.

The rooster, which is with the breeding hens, should be young and healthy so he does a good job of guarding the hens and fertilising their eggs with his sperm.

Breeding

The sex organs of kokorako are small and the rooster and hen need to mate closely to fertilise eggs.

You must always have a healthy rooster with your hens to make sure you get good quality fertilised eggs for breeding.

The rooster, which is with the breeding hens, should be young and healthy so he does a good job of guarding the hens and fertilising their eggs with his sperm.



Differences between roosters and hens

- the differences between adult roosters and hens are easy to see; males are larger and may have more elaborate feathering and colouring
- it is difficult to tell the sex of baby chickens because their sex organs are very small and located inside their body
- you have to look closer at growing chickens to be able to tell the males from the females.
- the young roosters (cockerels) grow faster than their sisters

Combs:

- young hens (pullets) are much slower to develop their combs

Feathers:

- cockerels might show brighter colours in their feathers
- young pullets might grow plain-coloured feathers.

7. Eggs: parts, benefits & egg laying

Outcome

By the end of this session, participants will be able to:

- describe the parts of an egg
- list kokorako food that improves the colour of the yolk and strength of the egg shell
- list three benefits of eggs to human health
- explain the egg laying process.

Key messages

1. You do not need a rooster with your hens to get eggs.
2. A rooster is needed when you want to breed chickens.
3. Chicken eggs and meat are very good sources of protein.
4. To lay eggs, hens need to be healthy.

Approach

...discuss

- how to improve eggs - using kokorako food for explanation
- brainstorm the benefits of eggs for food
- the formation and laying of an egg.

...practical

- look at the parts of an egg.

Materials

...for discussion

- example of green food, corn and shell grit
- large illustration of the formation and laying of an egg.

...for practical

- two fresh eggs.

Procedure

1. **Outline** the session: identify parts of an egg, understand what kokorako feed improves egg quality, explore the benefits of eggs to people's diet and discuss how an egg is laid.
2. **Demonstrate** the parts of an egg using a broken egg. If you don't have an egg use an illustration.
 - break an egg carefully onto a plate
 - identify the yolk
 - identify the egg white; explain that there are two parts to the white of the egg; in good quality eggs the thicker white is larger than the thin, watery white around the edge
 - point out the two cords at each end of the egg; explain that these hold it inside the shell.
 - point out where the egg is fertilised.Referring to a whole egg, explain that:
 - eggs have a pointed and a round end
 - the round end is the one that is laid first by the hen
 - the shape of the egg does not indicate the sex of the chicken.
3. **Explain** the food that improves eggs:
 - green food and corn fed to chickens helps to make the egg yolk a bright yellow colour
 - calcium should be fed in the form of shellfish and bone to help the egg shell grow.
4. **Discuss** the benefit of eggs to human health:
 - chicken eggs and chicken meat are very good sources of protein that help our bodies grow; many people in the world do not get enough protein

- both the egg yolk and the white around it contain a lot of protein
- children need more protein than adults because they are growing
- like chickens, **people need three main kinds of food eg:**
 - energy foods for humans - root crops, grains and seeds
 - protein foods for humans - eggs and chicken meat; fish, animal meat and plants like peanuts, beans and peas
 - protective foods for humans – fruit and vegetables.

5. Ask how you know when a hen is laying. Demonstrate using a hen:

- the vent is soft and moist
- there is a two finger space between the pelvic or laying bones.

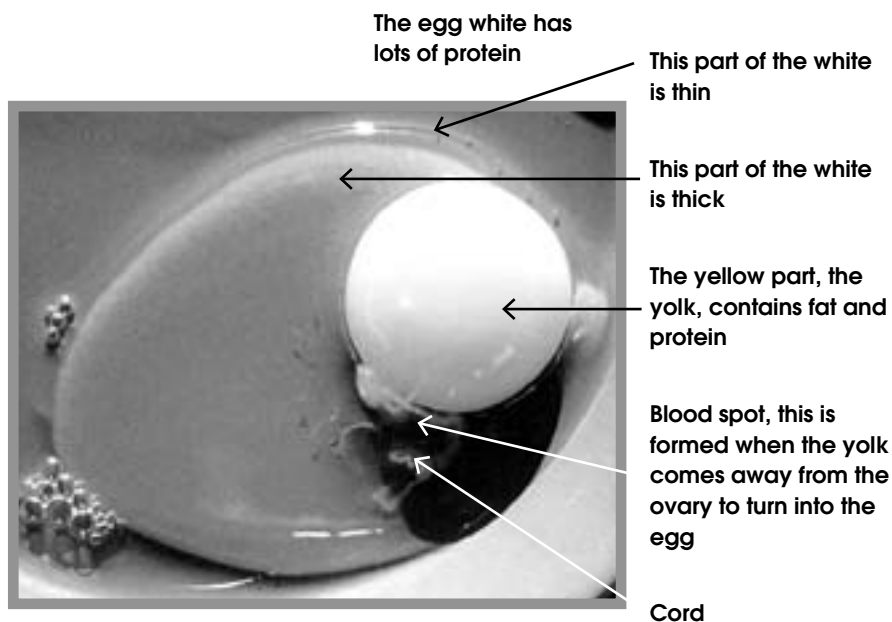
6. **Identify** how an egg is made by looking at the internal sex organs of a hen. You can use a dissected bird if available or a large illustration. Discuss the questions below using photocopies of the handout sheet for student to fill in.

Question	Answer
Why are there blood vessels around the yolk sacs in the ovary or a blood spot on an egg?	To bring food to the yolks
How long does it take for a hen to make an egg?	26 hours
How long does it take to make the shell of an egg?	20-21 hours
How many months old does a pullet need to be before she lays her first egg?	Five months or more
What is the latest time a hen will lay during the day?	3pm
What starts an egg leaving the ovary?	The rising sun
Hens lay eggs in groups. What are these groups called?	Clutches
How long does it take for a clutch of eggs to hatch?	21 days

7. **Summarise** by having the students form small groups to answer this quiz.

Question	Answer
Give three main reasons why the village kokorako suit the Solomon Islands.	<ul style="list-style-type: none"> • they are already bred with a mixture of imported and jungle fowl • they can survive well on local foods as well as finding their own food in the village • they are suited to the tropical climate.
Name the three main points to help select good breeding chickens	<ul style="list-style-type: none"> • strong and healthy young chickens, if possible • good egg-laying hens • good mother hens.
How many roosters should be kept with how many hens?	One rooster to ten hens.
How do you tell if a hen is healthy and laying?	<ul style="list-style-type: none"> • red comb and wattles • healthy shiny feathers • making happy sounds.
How old does a young hen or pullet need to be before it lays eggs?	<ul style="list-style-type: none"> • village hen - nine or ten months • imported hens - six months.
Do you need a rooster with the hens to make them lay?	No.
Do you need a rooster with the hens to make sure you get baby chickens? Why is that?	Yes. The rooster fertilises the hens egg with his sperm during mating.
Explain some ways that you tell the different sexes of young chickens.	<ul style="list-style-type: none"> • males are larger and may have more elaborate feathering and colouring • the young roosters grow faster than their sisters.

Parts of an egg



This end is pointed



This end is rounded and is laid first. It is where the air bubble is

Food that improves eggs:

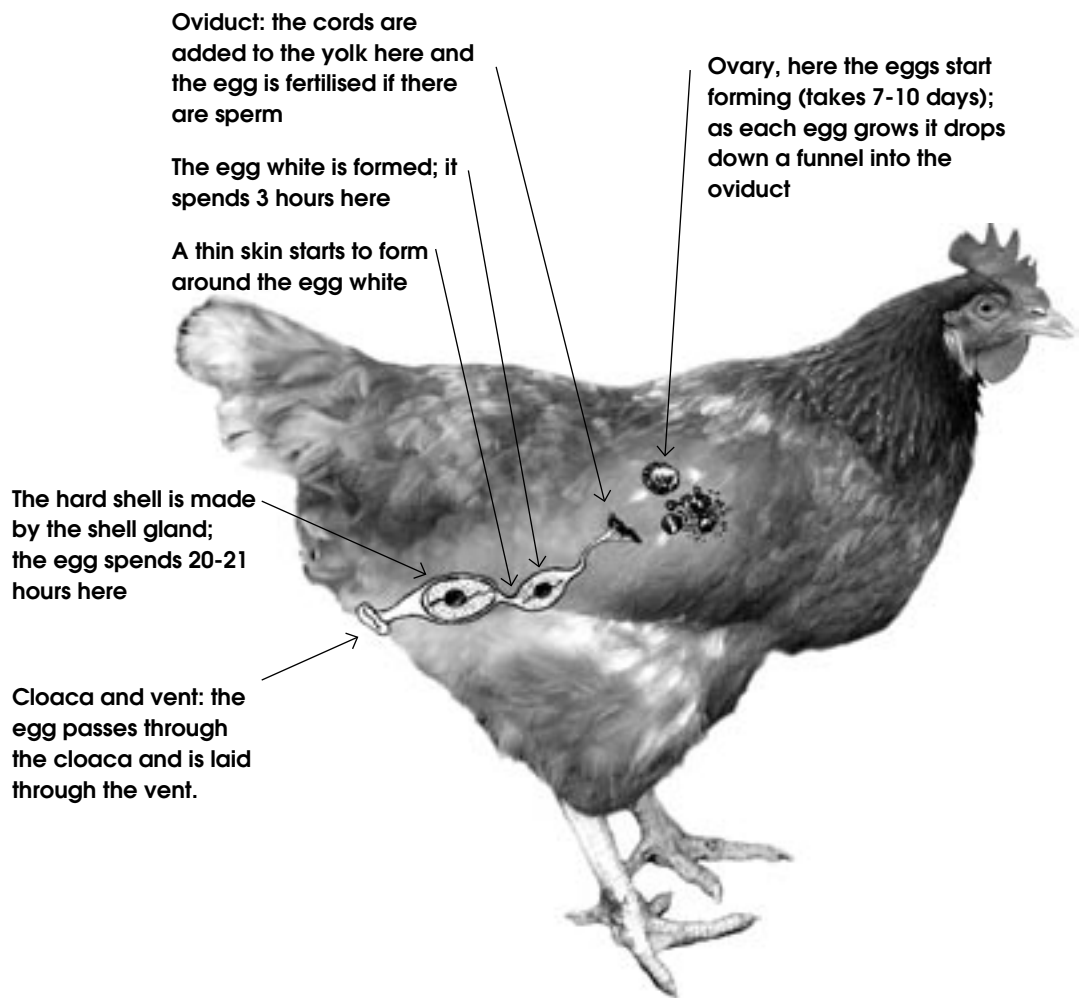
- green food and corn fed to chickens helps to make the egg yolk a bright yellow colour
- calcium should be fed in the form of shellfish and bone to help the egg shell grow.

Benefits of eggs to human health:

- chicken eggs and chicken meat are very good sources of protein that help our bodies grow; many people in the world do not get enough protein
- both the egg yolk and the white around it contain a lot of protein
- children need more protein than adults because they are growing
- like chickens, **people need three main kinds of food:**
 - **energy foods** for humans – root crops, grains and seeds
 - **protein foods** for humans – eggs and chicken meat; fish, animal meat and plants like peanuts, beans and peas
 - **protective foods** for humans – fruit and vegetables.

The hen — the female organs

Forming and laying eggs



1. You do not need a rooster with your hens to get eggs.
2. A rooster is needed when you want to breed chickens.
3. Chicken eggs and meat are very good sources of protein.
4. To lay eggs, hens need to be healthy.

How do you know when a hen is laying?

- the vent is soft and moist
- there is a two finger space between the pelvic or laying bones.

Egg laying

If you have good quality hens which are not too old and are cared for properly they will give you plenty of eggs

Eggs are laid in groups called 'clutches'.

When are eggs laid?

Most eggs are laid in the morning but each egg in a clutch is laid later than the one the previous day until the last egg is laid by 3pm; the hen then might have a day or so off laying and start again in the morning.

The egg laying cycle:

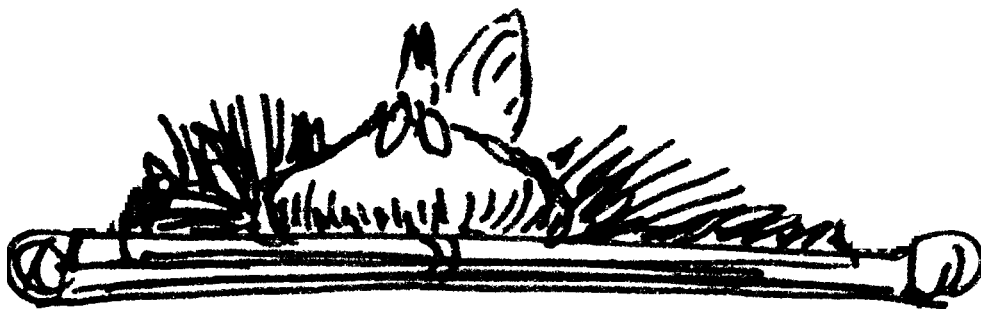
- eggs start leaving the ovary (the place inside the chicken where the eggs are formed) with the rising of the sun
- in most hens it takes 26 hours for an egg to be made in the ovary; this explains why eventually the hen has a day off laying
- a village hen may only have a clutch length of only six, so she will lay an egg every day until she lays six, then she will rest for a day before she starts to lay again.

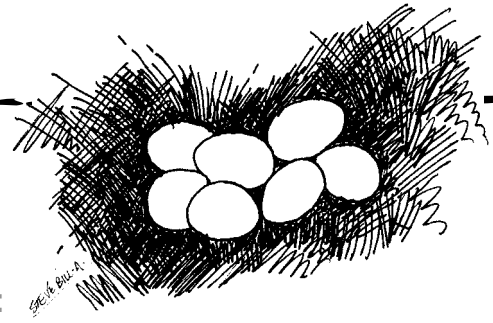
Broody hens

- if eggs are left in the nest the village hens might decide to try to hatch them and may not start laying again; the hens will be then called 'broody' and sit on those eggs for 21 days to try to hatch them
- compare that to the clutch length of an imported laying fowl which may lay 12 or 15 eggs, one each day until she has a days rest before she starts again without going broody
- it is a good idea to have a mixture of both imported and village fowls so that you always have both eggs and broody hens to keep your flock going.

When are chickens ready to lay?

- most imported chickens do not begin to lay until they are at least five or six months old
- female chickens which have not started to lay are called pullets until they reach 12 months of age
- village pullets may take seven or eight months to lay their first egg because they have not been bred specially to lay eggs
- when the pullets start to lay, their eggs can be small; as they grow older the egg size will increase.





QUIZ: breeding

Write down the answers to these questions about eggs and egg laying:

1. Why are there blood vessels around the yolk sacs in the ovary or a blood spot on an egg? _____

2. How long does it take for a hen to make an egg? _____
3. How long does it take to make the shell of an egg? _____
4. How many months old does a pullet need to be before she lays her first egg? _____
5. What is the latest time a hen will lay during the day? _____
6. What starts an egg leaving the ovary? _____
7. Hens lay eggs in groups. What are these groups called? _____
8. How long does it take for a clutch of eggs to hatch? _____

Write down the answers to these questions you have talked about in your breeding workshop

1. Give three main reasons why the village kokorako suit the Solomon Islands.
 - i) _____
 - ii) _____
 - iii) _____
2. Name the three main points to help select good breeding chickens
 - i) _____
 - ii) _____
 - iii) _____
3. How many roosters should be kept with how many hens? _____
4. How do you tell if a hen is healthy and laying? _____
5. How old does a young hen or pullet need to be before it lays eggs? _____
6. Do you need a rooster with the hens to make them lay? _____
7. Do you need a rooster with the hens to make sure you get baby chickens? Why is that? _____

8. Explain some ways that you tell the different sex of young chickens: _____

Care & management:

This section contains lesson outlines to assist you to organise workshops:

8.	Improving kokorako keeping.....	30
9.	Understanding kokorako.....	31
10.	Keeping kokorako healthy.....	34
11.	Common insect pests & predators.....	36
12.	Catching and carrying chickens.....	39
13.	Feathers and wing cutting.....	41
14.	Marking breeding kokorako.....	43
15.	Everyday activities.....	45
16.	Quiz: caring and managing kokorako.....	47

8. Improving kokorako keeping

Outcome

By the end of this session, participants will be able to:

- describe the problems with the way village chickens are managed
- list three ways to improve the caring and managing of kokorako in the village.

Key messages

1. Give your kokorako a balanced diet every day to help prevent diseases and improve production of eggs and meat.
2. Provide a secure, clean kokorako house to protect birds from predators and bad weather.

Approach

...discuss

- brainstorm ways to improve the care and management of kokorako.

What is wrong with the village chickens?

Village chickens seem to need very little care at all. They look after themselves and find their own food. This belief may be due to centuries-old traditions going back to the time when the first wild jungle fowl (chickens) were brought in the canoes with the early human immigrants.

Village kokorako can produce many more eggs and better meat if they have better care and management.

Village kokorako spend much time breeding and raising chickens rather than laying eggs.

Young village chickens have a poor survival rate. With better feeding and protection from predators young chickens have a better chance of living.

The chickens need good feed every day and a house to keep them, their eggs and their young chickens safe.

Using chicken manure on the garden will improve the soil and help grow healthy crops that can be fed to the kokorako.

Procedure

1. **Introduce this session:** Care and management of kokorako are important to the maintenance of a productive flock of chickens so the village has plenty of eggs and chicken meat.

Chickens are a very important source of food and should be adopted as part of your family and given just as much care as your own family.

Tell students that we will look in more detail later on in the workshops at elements of care and management such as feeding, breeding and housing.

2. **Explain** the problems with the way village chickens are managed:
 - free range so predators can kill them
 - they have to find their own food which may not be enough
 - they spend most of their time raising chickens rather than laying eggs.
3. **Brainstorm** with participants ways of caring and managing kokorako that would improve egg and meat production:
 - providing a secure kokorako house to protect them from predators and cold weather
 - providing food (a balanced diet - body building, energy and protein food) every day
 - regularly change water and clean the house to keep pests away.
4. **Describe** what the next session will cover:
 - understanding kokorako by:
 - looking at their internal organs
 - listening to their sounds to understand whether they are frightened or laying eggs.

9. Understanding kokorako

Outcome

By the end of this session, participants will be able to:

- identify five of the organs and skeleton parts of a kokorako
- describe the different sounds made by kokorako and their possible meaning.

Key messages

1. Understanding the parts of a kokorako will help you to care for them.
2. Become familiar with the range of sounds and calls made by your chickens so you can improve your care of them. Think about what the different sounds mean.

Approach

...discuss

- identification of organs and parts of the skeleton.

...practical

- listen to kokorako sounds.

Materials

...for discussion

- a dissected kokorako or...
- a large illustration of the organs and skeleton of a kokorako or hand out a photocopy of the illustrations.

...for the practical

- visit a chicken house to listen for sounds made by the kokorako.

Procedure

1. **Introduce this session:** we will discuss the insides of a kokorako to understand how they work.

This can help us to look after our birds and determine if they have any problems.

We will then go to a kokorako house to listen to the sounds made to try and work out what these sounds mean.

2. **Identify** the organs of a kokorako using a dissected bird if available and a large illustration.

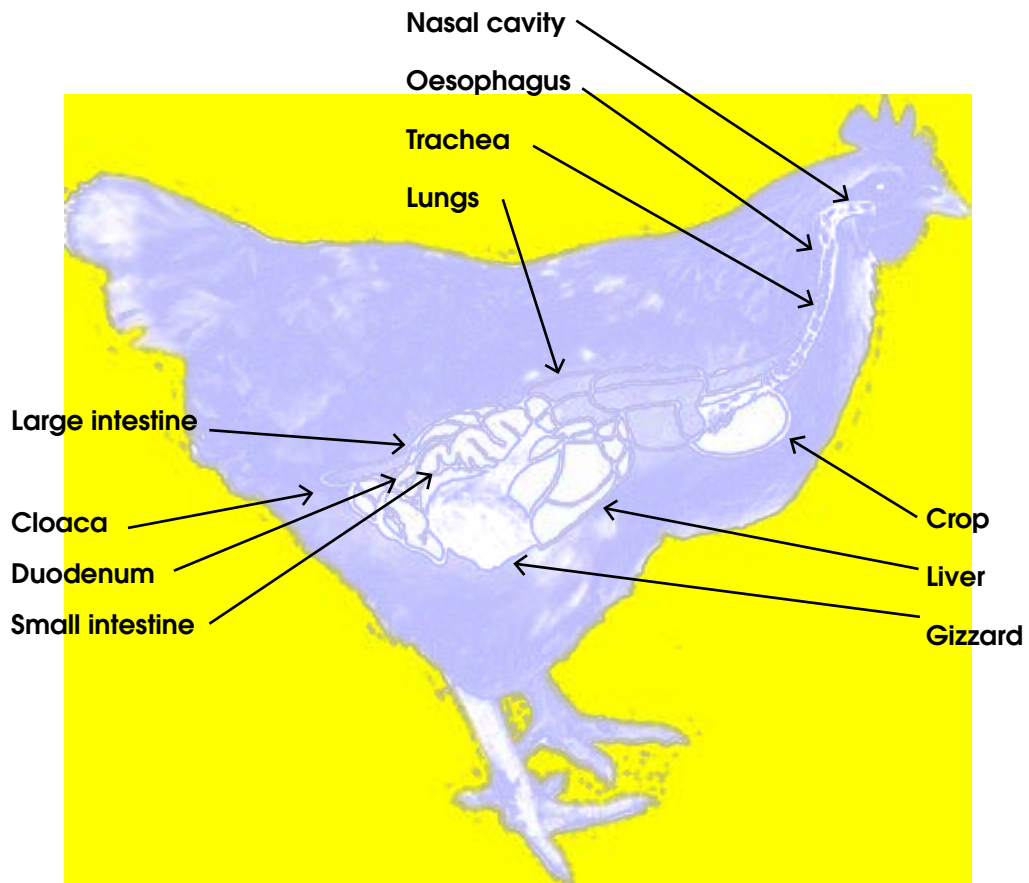
Use a kokorako a family plans to eat for this workshop.

Dissect the chicken to reveal the organs and skeleton.

Using the illustration, explain the function of the organs and identify the parts of the skeleton.

3. **In small groups** have participants visit a chicken house and listen to the sounds made by the kokorako and try to work out what they might mean eg. fright, egg laying, calling others or happy.
4. **Summarise** by asking the participants to name parts organ and skeleton parts.

Inside a kokorako — the organs



What do the organs do?

Kokorako do not have teeth so food goes down the throat through the:

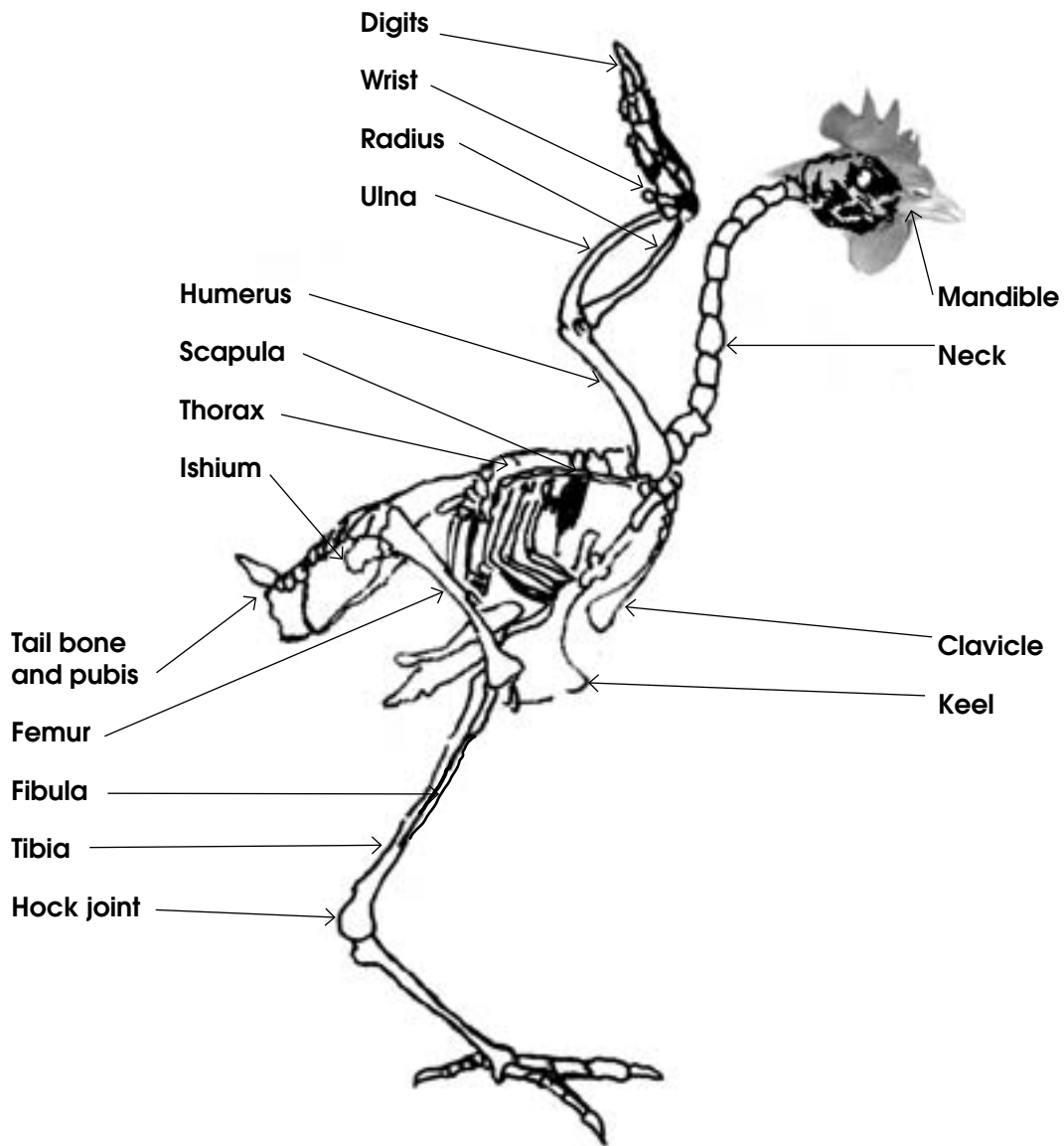
- oesophagus – tube for transporting food to the...
- crop – where food is stored and moistened and then carried through the oesophagus to the...
- gizzard – a strong muscular stomach with a rough lining; the kokorako eats grit to help break food into small pieces to then pass through the...
- duodenum – the first part of the small intestine where food is processed then passes to the...
- small intestine – the small pieces of food act with fluids from glands in its wall and bile from the...

- liver – which removes waste then the large pieces of food move to the...
- large intestine – some of the food is taken into the blood then parts of the food not digested are passed through the...
- cloaca – waste (undigested food) is passed here also urine is passed which has been carried from the kidneys.

Kokorako breath through their nose and the air passes through the:

- nasal cavity – behind the throat down the...
- trachea – then down to the...
- lungs – the air sacs; kokorako do not have sweat glands so when they get too hot the lungs let out this excess heat by opening their mouth and panting.

Inside a kokorako — the skeleton



10. Keeping kokorako healthy

Outcome

By the end of this session, participants will be able to:

- list a range of activities they can carry out to maintain the health of their kokorako.

Key messages

1. Avoid overcrowding in the kokorako house.

Approach

...discuss

- activities they can do to keep kokorako healthy

Materials

...for discussion

- examples of medicines for chickens
- a well constructed kokorako house and yard

Procedure

1. **Review:** organs of a kokorako.
2. **Brainstorm:** with participants what they can do to keep their kokorako healthy:
 - medicines for chickens
 - reducing your kokorako's risk of getting diseases by:
 - maintain health through feeding with a balanced diet
 - maintaining a clean poultry house
 - providing good drainage
 - allowing kokorako to free range.
3. **Visit:** a kokorako house and have participants examine the kokorako's feed, house and drainage. Have participants find out what medicines are used and whether kokorako free range.
4. **Summarise** by asking the participants to list what they think are the most important things they can do to keep kokorako healthy.



How to keep your kokorako healthy

There are a number of things we can do to keep our kokorako healthy...

Medicines for chickens

- disease control using imported medications and vaccines costs too much for most villagers
- to keep your kokorako healthy, give them proper care and food
- to improve kokorako health investigate natural bush medicines used by people in villages; as kokorako breeding is developed over wider areas, investigating bush medicines will become an important part in trying to improve village kokorako health.

Introduced diseases

Try not to bring new kokorako into your flock that might carry disease or be too weak to resist the diseases your kokorako are used to.

You can breed all your new chickens from your own flock.

As imported medicines are difficult and expensive to obtain you need to make sure your kokorako are kept healthy with good food and housing.

Feeding

It is very important feed to your kokorako the right food to maintain their health.

They need:

- body building food (protein such as coconut meal, fish meal, leucaena meal, meat meal, soybean meal and sunflower)
- energy food (carbohydrate, such as cassava, coconut, fresh, copra, corn/maize, sago, sorghum, sweet potato and unpolished rice)
- protective food (vitamins and minerals, such as leafy greens).

This provides kokorako with a balanced diet for good health.

Poultry house

Check your kokorako house and yard to make sure:

- the ground around the kokorako house and yard does not become stale and unhealthy
- the floor of the kokorako house is cleaned regularly and the manure and other material is placed on the compost heap to use later on the gardens
- the floor of the kokorako house is made from gravel material to help with drainage and keep the kokorako house dry
- the kokorako house is not overcrowded as this can cause illness and cannibalism.

Drainage

Make sure your kokorako house is dry and is able to drain away water from the kokorako yard. Good drainage will help prevent disease.

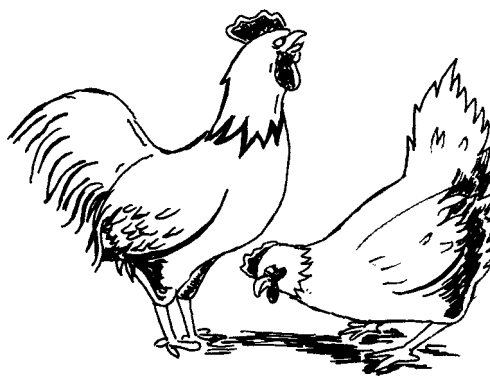
Many island villages are located close to lagoons or beaches, so water will drain through the sandy soil.

Dig drains around the kokorako house to stop flooding.

Free range

Allow the kokorako to free range after midday.

This will allow them to forage for food and will help them to stay healthy.



11. Common insect pests & predators

Outcome

By the end of this session, participants will be able to:

- describe the common insect pests of kokorako
- list two solutions to a pest problem
- describe the common predators of kokorako
- list two solutions to a predator problem.

Key messages

1. It is important to keep the kokorako house clean and dry to reduce lice and mites.
2. Kokorako need a place to dust bath to help keep mites and lice away.
3. Allowing kokorako to free range after midday will help keep birds healthy.
4. Remove uneaten food, rubbish and bush from around kokorako house to keep rats away.
5. Make sure there is someone to look after the kokorako when people have gone to work in their gardens to keep away predators like snakes and hawks and to feed and water the kokorako.

Approach

...discuss

- use a chicken to demonstrate how and where to look for pests.

Materials

...for discussion

- provide two or three chickens for demonstration.

Procedure

1. **Review** the parts of kokorako. This will help in demonstrating where to find pests on kokorako.
2. **Demonstrate** how to check kokorako for signs of pests eg. lice, mites and fleas. If they are not present, describe the pests.
3. **Ask** participants to check kokorako and identify any pests present.
4. **Brainstorm** solutions to reduce pest problems eg:
 - medicated powders and sprays (expensive)
 - provide area for dust bath
 - old engine oil or kerosene on perches
 - bush medicine.
5. **Ask** participants what animals might eat kokorako eggs and young chickens eg. rats, snakes and hawks.
6. **Brainstorm** solutions to keep predators away eg:
 - remove rubbish
 - use cats and dogs
 - avoid over-feeding and remove uneaten food at night
 - remove eggs in the evening.
7. **Summarise** the types of kokorako pests and predators and possible solutions.

Common insect pests & predators

If you keep your kokorako house clean, do not overcrowd the birds, give them a good diet, allow them to free range in the sunlight after midday and ensure they have soil to dust bath in, this will reduce the number of pests your kokorako might get.

Common insect pests

Lice

Lice are a pest which lives on the body of the chicken, especially around the rear area where it is warm and moist.

Mites

The mite lives in cracks and crevices in the chicken house, especially close to or on the roost or perch. They come out and feed on the blood of chickens at night.

Fleas

The flea lives in the grass and soil surrounding the kokorako house and feed on the blood of the kokorako.

How to look for signs of lice and mites:

- check the area around the vent; this is the most likely place to find lice and their eggs
- check in the cracks of the chicken house, especially around the perches or roosts, for mites.



Check the area around the vent for lice and their eggs



DUST BATHING

Common insect pests & predators (cont.)

Treatment

Sometimes it is necessary to use medicated powder or sprays to get rid of the insect pests. These are imported medicines and very expensive.

Old engine oil or kerosene can be used on perches and timber. Do not put engine oil or kerosene on the kokorako's body.

Perhaps you can think of a bush medicine that can do this job better.



Old engine oil or kerosene can be painted on perches to discourage mites

Predators

Rats

Rats eat eggs and small chickens and spread pests and diseases. Rat control will be a problem because of the lush undergrowth in most island areas.

Solutions include:

- the removal of all rubbish and bush near the chicken pens
- the use of poultry-friendly dogs and cats to catch the rats
- avoid over-feeding the poultry
- remove uneaten food at the end of the day to discourage rats at night
- remove all eggs from the nests in the evening unless you are waiting for the eggs to hatch.

Other predators

Hawks and snakes may be a problem because they eat young chickens and eggs.

People will usually know these predators are around because of the noise made by the kokorako.

Villagers should make sure there is always someone left in charge of the kokorako when the people are away working in their gardens or elsewhere.



To discourage rats at night, remove uneaten food at the end of the day and keep the pen clean

12. Catching and carrying chickens

Outcome

By the end of this session, participants will be able to:

- demonstrate the correct way to catch and carry a chicken.

Key message

1. If you want to manage your chickens well you need to visit them regularly throughout the day to check that they are alright.

The more they see you the quieter they will become, especially if at each visit you offer the chickens small pieces of food or vegetable scraps, soaked grain, kitchen scraps, fish scraps or garden leftovers.



Approach

...discuss

- the need to catch kokorako and explain correct carrying technique

...practice

- demonstrate catching and carrying kokorako.

Materials

...for discussion

- provide two or three (more if needed) chickens for demonstration and participant practice.

Procedure

1. **Introduce this session:** we will practice how to catch and carry a kokorako the correct way.
2. **Ask** participants why they might need to catch and handle a kokorako:
 - to inspect them for pests
 - to move them from house to house.
3. **Demonstrate** how to catch a kokorako:
 - with a net attached to a pole
 - using your hands to lift the kokorako either side of its wings
 - waiting until dark to remove from tree roost.
4. **Demonstrate** the correct and incorrect way of carrying a kokorako.
5. **Organise** participants into small groups; each person practices catching and carrying a kokorako.
6. Summarise the correct way to catch and carry kokorako.

Another way of carrying the kokorako

Carrying kokorako

Taming your kokorako

If you want to manage your chickens well you need to visit them regularly throughout the day to check that they are alright.

The more they see you the quieter they will become, especially if at each visit you offer the chickens small pieces of food or vegetable scraps, soaked grain, kitchen scraps, fish scraps or garden leftovers.

Catching kokorako

It is sometimes necessary to catch and handle your chickens to examine them or move them from house to house.

Using a net on a pole is the easiest way to catch the chicken out in the open.

If they are sleeping in the trees near your village you have to wait until it is dark to catch them.



Chickens can be carried under your arm

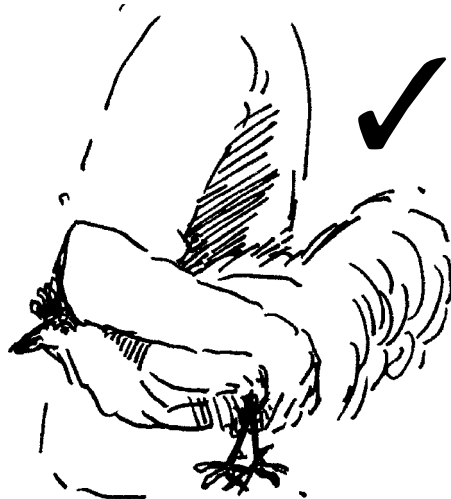
Carrying kokorako

Incorrect way

If carried by their feet, the chicken might flap its wings and struggle. It might hurt itself.

Correct way

A better way to carry a chicken is under your arm. This allows you to hold the legs and keep the wings from flapping. Make sure you face the rear of the chicken away from you so that it does not drop manure on you.



A better way to carry a chicken is under your arm



Incorrect way to carry kokorako

13. Feathers and wing cutting

Outcome

By the end of this session, participants will be able to:

- name the different feathers
- describe the purpose of the different feathers found on a kokorako
- describe the cutting of a chicken's wing feathers.

Key message

1. Knowing the different types of feathers helps in the management of your kokorako.
2. Cutting the wing feathers stops your kokorako flying out of its pen.

Approach

...discuss

- show and discuss the purpose of the different types of feathers..

...practice

- demonstrate the cutting of the wing feathers.

Materials

...for practical

- one kokorako for each small group so they can learn to cut wings properly
- several pair of scissors.

Procedure

1. **Review** the parts of a kokorako and explain to students that this session will cover learning about the different feathers of the kokorako and how to cut a wing to stop the kokorako flying away.
2. **Explain**, using a live bird, the different feathers found on the body.
3. **Ask** participants what the purpose of the feathers might be.
4. **Ask** participants why we might need to cut one wing of a kokorako:
 - wing cutting may be necessary to stop your chickens flying outside their house or yard.
5. **Explain** how to cut the wing:
 - be careful to stretch out the wing before you cut it so you do not damage the bones of the wing.
6. **Demonstrate** wing cutting:
 - hold the chicken steady
 - stretch out one wing
 - using a pair of scissors, cut across the flight feathers on the rear section of the wing; cut off the ends of both the primary and secondary feathers.
7. **Organise** participants into small groups; each person practices cutting a wing.
8. **Summarise:**
 - the purpose of the different feathers
 - things to be careful of when cutting the wing feather.

Feathers and wing cutting

Kokorako feathers

Chickens have four main types of feathers:

- **flight feathers** – the smaller feathers that fold over the front of the wing as it is extended are called 'coverts'. The end feathers of the wing are known as the 'primary'. The main feathers of the wing are called the 'secondary'
- **body feathers** – just like our clothes, these keep the chicken's body covered to protect the bird from the weather and from damage as they move around
- **down feathers** – these are the smaller, softer feathers underneath the body feathers; they help keep the body insulated from heat, cold and wet.
- **pin feathers** – these are the start of new feathers and can be seen at any time on the chicken's body; as feathers fall out, pin feathers start to replace them.



Photo courtesy E. McPeake

Flight feathers

Wing covers

Primary feathers

Secondary feathers

Wing cutting

Why cut kokorako's wing?

Wing feathers help the kokorako to fly.

Wing cutting may be necessary to stop your chickens flying outside their house or yard.

Cutting the flight feathers from one wing only will throw the kokorako off balance if it tries to fly.

Cutting the wings

- hold the chicken steady
- stretch out one wing — be careful to stretch out the wing before you cut it so you do not damage the bones of the wing
- using a pair of scissors, cut across the flight feathers on the rear section of the wing; cut off the ends of both the primary and secondary feathers on one wing.



Cutting one wing — using a pair of scissors cut across the flight feather on the rear section of the wing

14. Marking breeding kokorako

Outcome

By the end of this session, participants will be able to:

- explain why toe marking is done
- describe the two methods used for toe marking.

Key message

1. Toe marking is used to identify specially-bred kokorako.

Approach

...discuss

- why you would toe mark

...practice

- demonstrate two methods of toe marking.

Materials

...for practical

- two or three kokorako for marking
- special tools in various patterns for marking
- scissors or knife to cut the web.

Procedure

1. **Explain** why you toe mark a kokorako:

- easy to help identify specially bred kokorako as they grow
- you might mark the baby chickens as they hatch.

2. **Demonstrate** how to toe mark a kokorako by:

- punching a hole in the webbing of the kokorako's foot
- cutting through the web of the foot with a knife or pair of sharp scissors.

Explain the wound will bleed a little but the cut will soon heal.

3. **Summarise:**

- the purpose of toe marking
- two methods of toe marking.

Marking breeding kokorako

Why would you toe mark a kokorako?

Toe marking is a very easy to use to help you identify any specially bred chickens as they grow.

If you are breeding a lot of chickens you can mark baby chickens as they hatch.

Equipment

You can punch holes in the web of a chicken's foot with a special tool in various patterns to help identify each bird .

If you don't have the right tool to punch holes then the web can be cut with scissors or a knife.



Photo courtesy E. McPeake

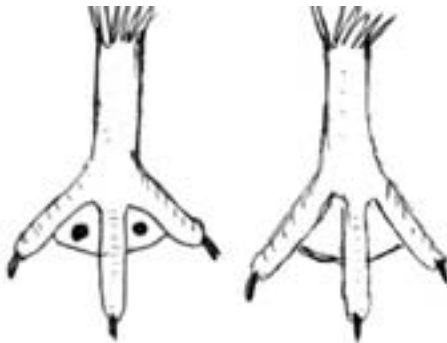
Kokorako foot showing small web for marking

How do you toe mark a kokorako?

There are two methods of toe marking

1. punching a hole in the webbing of the kokorako's foot
2. cutting through the web of the foot with a knife or pair of sharp scissors

The wound will bleed a little but the cut will soon heal.



Method 1: toe marking by punching hole in the webbing of the kokorako's foot



Method 2: cutting through the web of the foot with a knife or pair of sharp scissors

15. Everyday activities

Outcome

By the end of this session, participants will be able to:

- explain why it is important to care for kokorako each day
- explain the daily activities to care for their kokorako.

Key message

1. Caring for kokorako every day keeps them healthy and producing eggs.

Approach

...discuss

- the importance of daily caring activities
- what time of day the activities are carried out.

Materials

...for discussion

- flip chart paper and marker pens.

Procedure

1. **Review** the session on how to keep kokorako healthy:
 - reducing kokorako's risk of getting diseases
 - maintain health through feeding with a balanced diet
 - maintaining a clean poultry house
 - providing good drainage
 - allowing kokorako to free range.
2. **Ask** why is it important to carrying out regular activities to look after kokorako?
 - reducing pests and diseases
 - cleaning kokorako house to reduce predators
 - providing a balanced diet to keep kokorako healthy
 - to collect eggs.
3. **Brainstorm** daily activities to look after kokorako:
 - organise students into small groups
 - each group draws up four columns as labelled below on flip chart paper and lists activities:

LIST DAILY ACTIVITIES TO LOOK AFTER KOKORAKO

Early morning	Mid afternoon	Evening	Night

- each group reports their brainstorm back to the main group.

4. **Review** brainstorm and the trainer asks:
 - have we forgotten any activities?
 - why is it important to carry out these activities everyday?
5. **Summarise:** using the handout sheet.

Everyday activities

Early morning

- give the kokorako their food for the day
- make sure all kokorako have fresh drinking water
- check kokorako nests for eggs
- make sure the nests have plenty of soft material like rotted wood, dry grass and sand for the hens to lay in.

Mid afternoon

- collect all the eggs and allow the kokorako to run out free in their grassed yard
- provide fresh greenfood to those kokorako which cannot be let run free in yards.

Evening

- make sure all kokorako have drinking water
- shut all kokorako safely in their houses for the night
- collect any late eggs from the nests so rats do not steal them during the night
- make sure there is no food left in the houses which will encourage rats to come at night
- watch for any broody hens which want to sleep on their nest instead of the perch or roost.

Night

- this is the best time to catch any kokorako you want to move to another house or if you want to move a broody hen to her nest of eggs that you have ready.

Daily

- you should check through the day that your chickens are healthy and happy
- make sure they are not sick or fighting
- it will help to tame them if you offer small amounts of special food, like weeds from your garden or a sprinkling of seeds, each time you visit them
- make sure that drinking water is not spilt or made too dirty to drink by scratching fowls.



Allow the kokorako to free range in the afternoon.

Offer small amounts of food to tame your kokorako and get them used to you.

Photo: Tony Jansen

16. Quiz: caring and managing kokorako

Outcome

By the end of this session, participants will be able to:

- answer 80% of quiz correctly.

Procedure

- 1. Outline** that this session is a review of all the sessions we have learnt about caring and managing kokorako.
- 2. Form** small groups for students to help each other answer the quiz.
- 3. Review** answers with participants.

Question	Answer
Explain what important sounds your chickens make when they are: <ul style="list-style-type: none"> • frightened • laying eggs • calling other chickens. 	
Where do you look for insect pests?	<ul style="list-style-type: none"> • lice - around rear of bird • mites - in cracks in the chicken house • fleas - in grass and soil near the chicken house. They might also get on to your body.
How do you catch a chicken?	<ul style="list-style-type: none"> • using a net on a pole is the easiest way to catch the chicken out in the open. • if they are sleeping in the trees near your village you have to wait until it is dark to catch them.

Why is it important that you have tame chickens?	<ul style="list-style-type: none"> • they are easier to handle for breeding and management • they suffer less stress and are happier,
How to you help train them to be tame?	<ul style="list-style-type: none"> • visit them regularly throughout the day • the more they see you the quieter they will become, especially if at each visit you offer them small pieces of special food or vegetable scraps, soaked grain, kitchen scraps, fish scraps or garden leftovers.
How do you hold and carry a kokorako?	<ul style="list-style-type: none"> • holding the feet together, with the body tucked under your arm and facing backwards.
How do you cut the wing of a chicken?	<ul style="list-style-type: none"> • hold the chicken steady • stretch out one wing • using a pair of scissors, cut across the flight feathers on the rear section of the wing.
Why do you clean the floor of the kokorako house every week and replace the grass there?	<ul style="list-style-type: none"> • to keep the chicken house a clean and healthy place.
Review everyday activities	

QUIZ: caring and managing kokorako

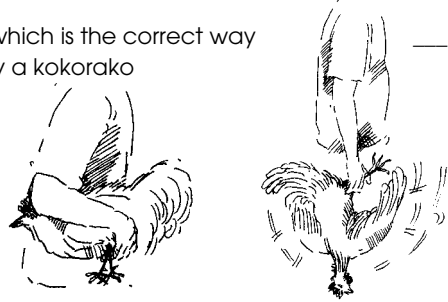
1. Explain what important sounds your chickens make when they are:

- frightened _____
- laying eggs _____
- calling other chickens. _____

2. Draw where to look for insect pests



3. Circle which is the correct way to carry a kokorako



4. How do you catch a kokorako? _____

5. Why is it important that you have quiet tame chickens? _____

6. How to you help train them to be tame? _____

7. Draw on the sketch where you would cut the wing of a chicken?



8. Why do you clean the floor of the kokorako house every week and replace the grass there?

9. Fill out the everyday activities table :

LIST DAILY ACTIVITIES TO LOOK AFTER KOKORAKO

Early morning

Mid afternoon

Evening

Night

Feeding kokorako:

This section contains lesson outlines to assist you to organise workshops:

17.	Good food for kokorako	50
18.	Free choice feeding	54
19.	Feed quantities: young and old	56
20.	The digestive system	59
21.	Quiz: feeding kokorako	61

17. Good food for kokorako

Outcome

By the end of this session, participants will be able to:

- explain why it is important to feed kokorako a balanced diet
- list the three food groups necessary for kokorako to have a balanced diet
- list 2 examples of food from the different food groups

Key message

1. Correct feeding of village poultry will not only improve their production of eggs and meat but also keep the chickens healthy — well fed chickens will produce good food for you.
2. Kokorako need a mixed diet to stay healthy, just as people do.
3. Imported processed commercial feeds are too costly for most villagers. Locally grown grain of any sort is not really available in many island villages.
4. The diet for kokorako can be based on common locally available produce.

Approach

...discuss

- a balanced diet for kokorako
- local sources of kokorako food.

...practice

- identify local food sources.

Materials

...for practical

Examples of different:

- protein foods
- energy foods
- protective foods
- green food.

Procedure

1. **Review** previous discussion from introduction training sessions:

Question	Answer
Give the three main reasons why it is necessary to improve kokorako keeping in the Solomon Islands.	<ul style="list-style-type: none"> to improve family diets to produce waste materials useful as garden fertilizer to create small business opportunities.
What do chickens need to grow healthy and safe?	<p>Proper feeding and clean water every day.</p> <p>To be kept safe in their own house.</p> <p>To have properly organised breeding for better results.</p>

Introduce this series of workshops about feeding by explaining that the sessions will help us feed kokorako correctly.

In this first session we will look at what foods we need to give the kokorako so they have a balanced diet.

2. **Describe** the three food groups and why it is important to provide food from these three groups every day:

Body building food	Energy food	Protective food
Kokorako need protein to grow and to produce eggs and feathers.	Kokorako need carbohydrate to give them energy to move around.	<p>Kokorako need vitamins to support the chemical processes taking place in the body that are necessary to normal growth.</p> <p>Minerals are needed to help make eggshell and for normal body functioning.</p>

Explain clean water is needed everyday to support chemical processes taking place in the body and for normal growth.

3. **List** with participants what foods are in each food group:

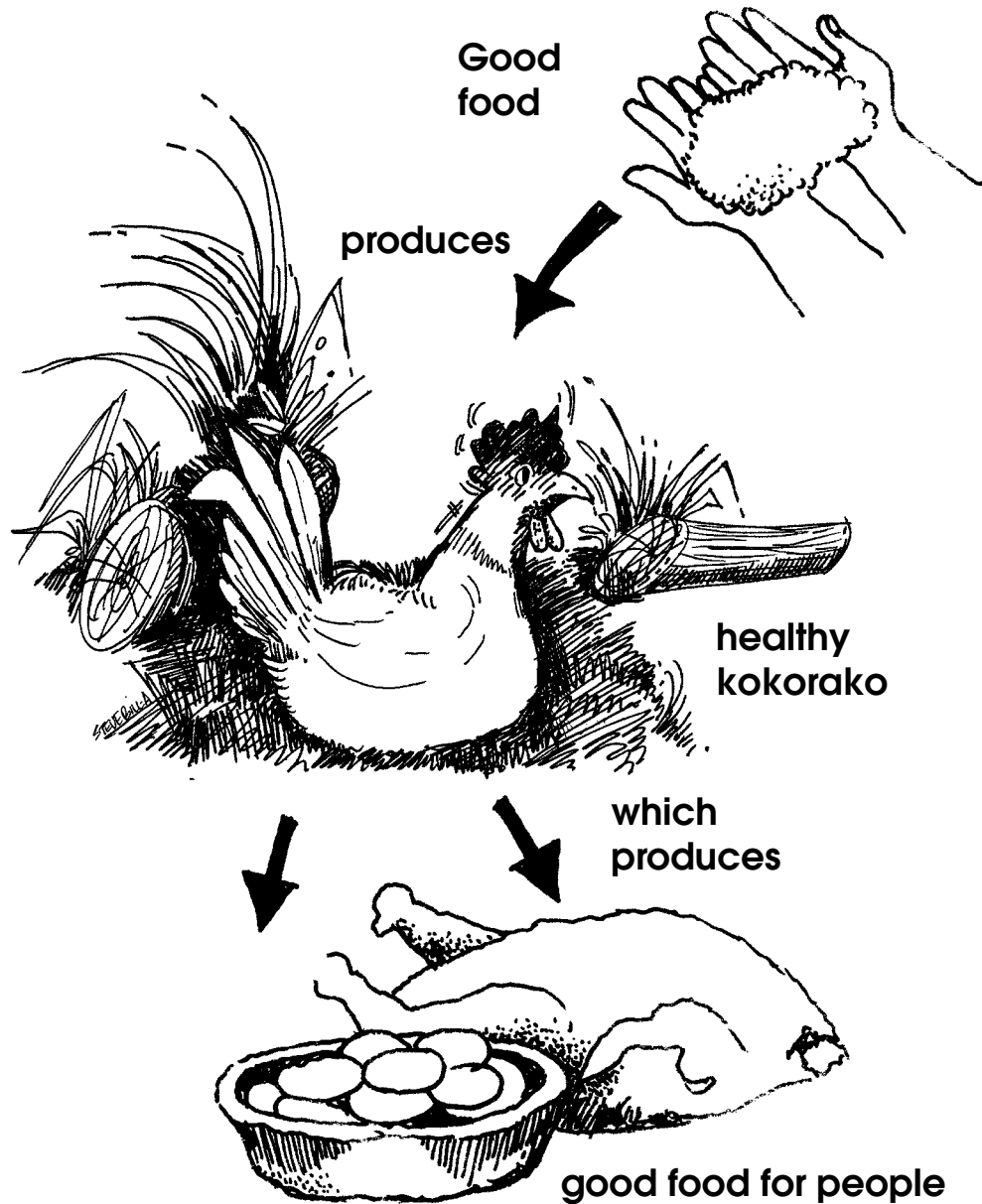
Body building food	Energy food	Protective food
<p>Cooked fishing waste; fishmeal in bags from canneries is an ideal protein source for larger poultry projects.</p> <p>Animal offal.</p> <p>Earthworms.</p> <p>Insects including white ants.</p> <p>Bean and peanut meal.</p>	<p>Grated coconut — make sure it is good quality otherwise it could poison your kokorako - left over copra cake from oil extraction for soap is suitable.</p> <p>Root crops — cooked potatoes, yams or taro make very good energy feed for kokorako; root crops should be boiled to make better use of the starch.</p> <p>Animal fat can also be fed for energy in the hot climate.</p> <p>Sugarcane.</p> <p>Sorghum.</p> <p>Corn.</p> <p>Sunflower.</p> <p>Rice and other grains.</p>	<p>Vitamins are obtained from the fresh green leaves of plants.</p> <p>Greenfood — green leafy vegetables, cut grass; provide access to grass yards in the afternoon.</p> <p>Paw paw.</p> <p>Chilli.</p> <p>Japanese cabbage.</p> <p>Amaranthus.</p> <p>Seashell — this can be burned and crushed to provide calcium and grit for the poultry.</p> <p>Crushed animal bones provide calcium and phosphorous in the form of grit.</p> <p>Salt is available from seaside pools or from seaweed.</p>

4. **Demonstrate:** how rice, other grains or grated coconut can be fed as an evening encouragement for the poultry to return to their house.

5. **Summarise:**

- the purpose of the different food groups
- ask participants for examples of food in each of the food groups.

Good food for kokorako



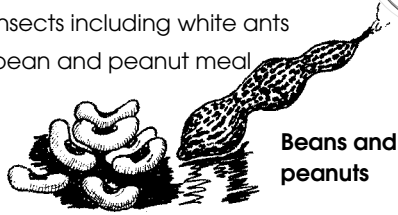
“...a scavenging hen ... lays only 30 to 50 eggs a year or up to 90 eggs a year with improved feeding and husbandry...”

Source: Spotlight FAO, UN (www.fao.org/ag/magazine/o203sp1.htm)

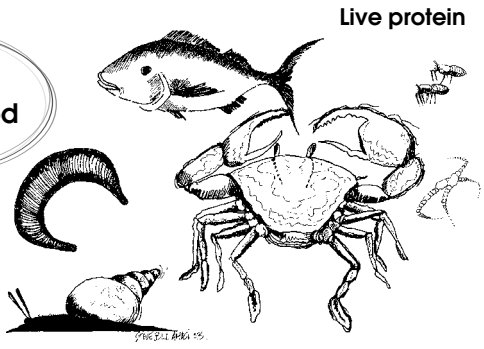
Balanced diet for kokorako

The three food groups...

- cooked fishing waste; fishmeal in bags from canneries is an ideal protein source for larger poultry projects
- animal offal
- earthworms
- insects including white ants
- bean and peanut meal



Body building food

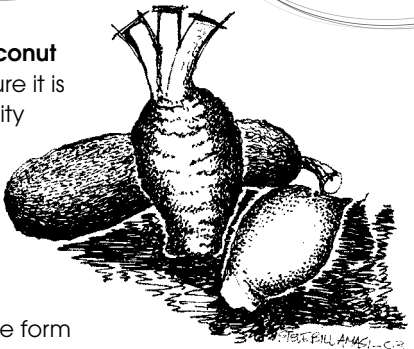


Energy food

Balanced kokorako diet

Protective food

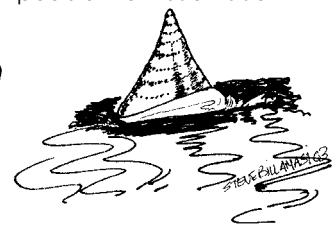
- **grated coconut** — make sure it is good quality otherwise it could poison your kokorako - left over copra cake form oil extraction for soap is suitable
- **root crops** — cooked potatoes, yams or taro make very good energy feed for kokorako; root crops should be boiled to make better use of the starch
- **animal fat** can also be fed for energy in the hot climate
- sugarcane
- sorghum
- corn
- sunflower
- rice and other grains.



Cooked potatoes, yams or taro make very good energy feed for kokorako

- **vitamins** are obtained from the fresh green leaves of plants
- **greenfood** — green leafy vegetables, cut grass; provide access to grass yards in the afternoon
- paw paw
- chilli
- Japanese cabbage
- amaranthus
- **seashell** — this can be burned and crushed to provide calcium and grit for the poultry
- **crushed animal bones** provide calcium and phosphorous in the form of grit
- **salt** is available from seaside pools or from seaweed

Provide clean water



Crushed animal bones and sea shells are good calcium and grit for kokorako

18. Free choice feeding

Outcome

By the end of this session, participants will be able to:

- describe how to set up a free choice feeding system
- list three different types of local materials used to make feeders
- describe how to make a feed container using recycled waste materials.

Key message

1. If you want to introduce new or different types of feed to the kokorako they will have to be trained to eat it first. The best time to introduce new types of feed is at the evening feed time or when you are trying to tame your kokorako.
2. If one of the food groups is eaten quickly then you know that you should give more of that food that day.
3. In overseas countries where commercially mixed feed is used, the kokorako do not get a choice of what they eat. This can be very wasteful and unnecessary.
4. Using recycling waste materials to make feeders helps keep the village environment clean and healthy.

Approach

...discuss/practice

- free choice feeding
- different types of feed containers.
- demonstrate free choice feeding.

Materials

...for discussion/practical

- samples of different food types
- three food collection containers such as plastic buckets and feeders made of locally available or recycled materials.

Procedure

1. **Review** previous session on the three food groups. Ask participants to list examples of different food for each group using a chart like this on the blackboard or flipchart paper:

Body building food	Energy food	Protective food

2. **Explain** free choice feeding:

- involves the separation of food groups into different feeders so the kokorako can choose what they need to eat
- should be done in the early morning when the day is cooler and the birds are more inclined to eat.

3. **Demonstrate** free choice feeding:

- use three buckets or similar containers to collect the different food groups (body building, energy and protective foods)
- the daily supply of each food type in its own container made of local materials such as bamboo.

4. **Ask** participants what local materials they could use as feed containers eg:

- carved wooden bowls
- half-coconuts
- split bamboo.

5. **Ask** participants what recycled waste materials could they could use as feed containers eg:

- drums
- large tins
- plastic containers.

6. **Summarise:**

- free choice feeding
- different feed containers that can be used.

Free choice feeding

Feed from the three food groups (body building food, energy food, protective food) should be provided separately every day so the kokorako can choose their own needs. This is called free choice feeding.

Free choice feeding can be carried out in the early morning when its cooler and the birds feel like eating.



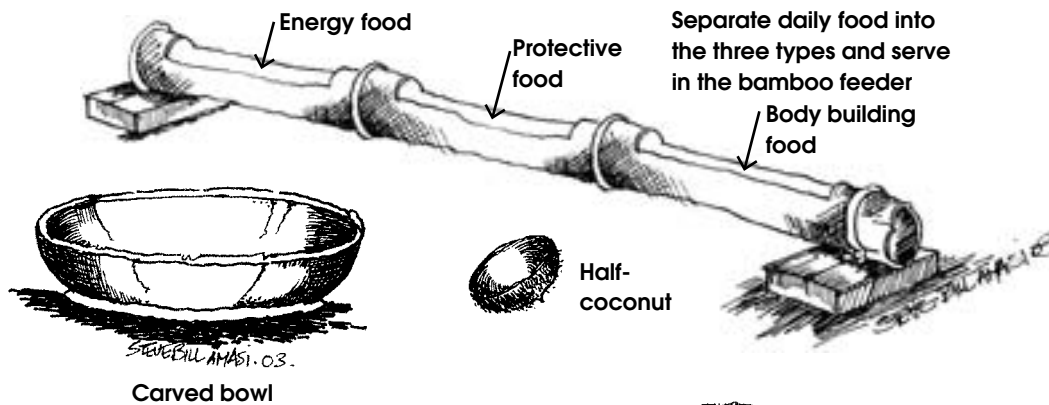
Solomon Islanders using three different buckets to collect and separate food groups.

Poultry can be allowed to free range outside their house after the middle of the day or around 3pm so they will have access to leaves, grasses and insects for a few hours every day.

Different feed and water containers

Use local materials

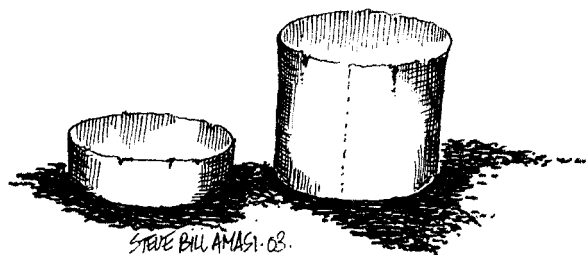
Use feed and water containers made from commonly-available materials such as carved wooden bowls, half-coconuts and split bamboo.



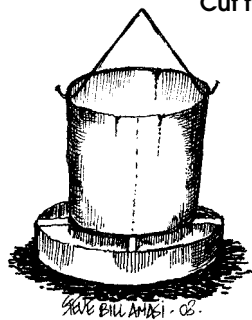
Use waste materials

Feed and water containers can be made from waste materials such as drums, large tins, plastic containers etc.

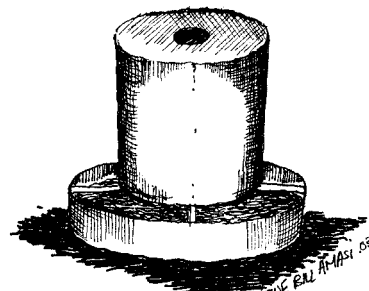
Recycling waste materials in this way helps keep the village environment clean and healthy.



Cut two different diameter tins



Join them at the right height



Completed feeder

19. Feed quantities: young and old

Outcome

By the end of this session, participants will be able to:

- calculate quantities of body building and energy food needed for feeding:
 - baby kokorako to six weeks
 - growing pullets
 - meat kokorako
 - layers and breeding kokorako.
- map their garden to show where kokorako food crops can be grown in relation to the kokorako house.

Key message

1. The feeding program is designed to be as simple as possible so that it and the kokorako project are likely to be continued.
2. Think of the poultry as an extension of your family food gathering duties, so that when a meal is prepared for the family the poultry feeding is done as well.
3. The diet for poultry described is based on common, locally available produce. It is fed to the poultry with allowances made for the needs of different age and sex groups.
4. Coconut, both fresh and dried (copra), will form the basis of most of the food that is available on most islands.
5. Up to 50% of feed for meat chickens can be good quality copra. Copra should constitute only 30% of total daily feed to growing birds and 20% to layers. Copra needs to be good quality otherwise it could poison your kokorako if it has started to go bad. Left over copra cake from oil extraction for soap makes a suitable energy food for poultry.
6. Remove surplus food from the pens every evening so that rats will not become a problem.

7. Surplus food can be placed on the compost heaps for use in the garden. If there is a lot of food leftover at the end of the day adjust the amount you give the kokorako accordingly.

Approach

...discuss/practice

- discuss daily quantities of body building and energy food and calculate daily feed quantities
- produce map of participants garden

Materials

...for discussion/practical

- handout sheet
- use a single handful or a half-coconut shell as a standard measure
- flipchart paper and pens to draw map.

Procedure

1. **Review** free choice feeding and introduce this session — that we will be calculating how much feed to give kokorako from body building and the energy food group.
2. **Explain** the maximum daily amount of energy food to use as part of a balanced diet using handout sheet:
 - explain this is the maximum amount you can use, you can use less.
3. **Explain** the maximum daily amount of body building food to use as part of a balanced diet using handout sheet:
 - explain this is the maximum amount you can use; you can use less.
4. **Explain** approximate quantities of body building and energy food needed to feed
 - baby kokorako to six weeks
 - growing pullets

- meat kokorako
- layers and breeding kokorako

5. Demonstrate, using the two examples below, how to calculate quantities of body building and energy food needed to feed a meat chicken each day:

- explain in Example 1 we need 70% energy food that can come from: 30% copra and 40% cassava (note that the maximum amount of cassava that can be used is 50%)
- explain how to measure quantities using Example 1; we could measure 30% copra and 40% cassava by:
 - 3 handfuls of copra and 24 handfuls of cassava OR
 - 3 half coconut shells full of copra and 4 half coconut shells full of cassava.

6. Form participants into pairs and have them help each other to calculate two examples of quantities of body building and energy food needed to feed a laying kokorako each day. Check their results.

7. Explain the diet for young chickens:

- in the first two or three weeks of life should include boiled eggs from hen, turtle, megapode or other bird depending upon availability
- up to six weeks old is the same for grown birds but it must be finely chopped so it is easier for the chickens to eat.

Constant supplies of grit (sand and gravel) and bone should be made

available to birds of all ages and stages of development.

- older than six to eight weeks of age should be provided separately in the three food groups to encourage free choice feeding.

8. Ask participants to map their garden to show where the different crops are grown and where the kokorako house is located. Hand out flip chart paper and marker pens to each participant.

Drawing up this map will help participants to:

- develop a survey of what foods are locally available
- think about the types of food from the different food groups they will need to grow for their kokorako
- the amount of food they need to grow
- appropriate position of garden.

9. Brainstorm, when participants have completed their map, what sort of food they grow in their kokorako food garden.

Brainstorm a list of food they need to grow from the three food groups to provide enough food for the kokorako. Ask participants where they can get their plant material from to grow the food that is missing from their gardens.

10. Summarise:

- importance of providing correct feed for the different kokorako
- importance of growing enough food for the different kokorako.

Quantities of body building and energy food used for feeding meat chickens each day:

NOTE: 10% can equal one handful OR half a coconut shell full of feed,
20% can be equal to two handfuls OR two half coconut shells full of feed.



Food		Example 1	Example 2		
Energy food:	70%	copra:	30%		
		cassava (only use 20% not 50%):	20%		
Body building food:	30%	sunflower:	30%		
				fresh coconut:	30%
				sweet potato:	30%
TOTAL:			Unpolished rice (only use 10% not 50%):	10%	
			soybean meal:	20%	
			fish meal:	10%	
		100%	100%		

Feed quantities for kokorako



Energy food	Amount of protein found in the food	Maximum daily amount to use as part of a the diet
Cassava	1%	1/2 or 50%
Coconut — fresh	8%	1/3 or 30%
Copra	7%	1/3 or 30%
Corn/ maize	9%	1/2 or 50%
Sago	1%	2/3 or 60%
Sorghum	9%	2/3 or 60%
Sweet potato	4%	1/3 or 30%
Unpolished rice	11%	1/2 or 50%

Body building food	Amount of protein found in the food	Maximum daily amount to use as part of the diet
Coconut meal	20%	1/3 or 30%
Fish meal	55%	1/10 or 10%
Leucaena meal	25%	1/10 or 10%
Meat meal	45%	1/7 or 14.3%
Soybean meal	30%	1/3 or 20%
Sunflower	25%	1/3 or 30%

Approximate quantities of body building and energy food:

Age/ type	% of body building food to use in the diet each day	% of energy food to use in the diet each day	Protective food is needed by kokorako every day
Baby kokorako to six weeks	50%	50%	Make a mixture of pawpaw, greens such as cabbage, chilli, crushed shell.
Growing pullets	10%	90%	
Meat kokorako	30%	70%	
Layers and breeding kokorako	20%	80%	

Quantities of body building and energy food used for feeding meat chickens each day:

NOTE: 10% can equal one handful OR half a coconut shell full of feed,
20% can be equal to two handfuls OR two half coconut shells full of feed.



Food	Example 1	Example 2
Energy food: 70%	copra: 30%	fresh coconut: 30%
	cassava (only use 20% not 50%) 40%	sweet potato: 30%
Body building food: 30%		Unpolished rice (only use 10% not 50%): 10%
	sunflower: 30%	soybean meal: 20%
		fish meal: 10%
TOTAL:	100%	100%

20. The digestive system

Outcome

By the end of this session, participants will be able to:

- identify parts of the digestive system of a kokorako.

Key message

Understanding the digestive system:

1. Helps you keep your kokorako healthy.
You will understand how the food moves through the body.
2. Helps you work out why kokorako might be sick.

Approach

...discuss/practice

- identification of digestive organs.

Materials

...for discussion/practical

- a kokorako for dissection, or
- illustration of the digestive organs of a kokorako, or hand out a photocopy of the illustration.

Procedure

1. **Introduce the session:** we will look at the digestive system of a kokorako to understand how the food moves through the body.
2. **Identify** the parts of the digestive system of a kokorako as it is dissected:
 - mouth and beak—the kokorako does not have teeth; it has a strong beak to pick up and break its food
 - oesophagus—tube that takes food to the stomach
 - crop—where the food is stored ready to move on later to the stomach and gizzard

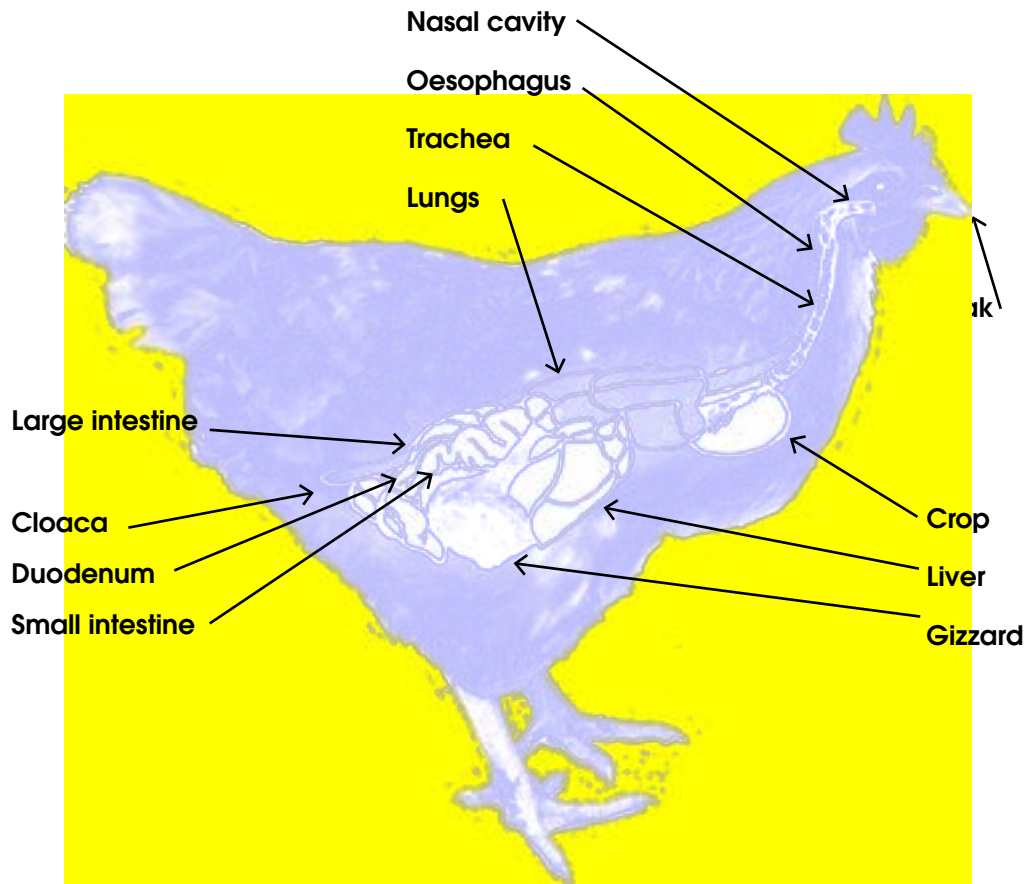
- stomach—where food is digested—broken into nutrients
- liver—the digested food is absorbed into the body through the liver
- gizzard—cut open the gizzard and show the participants how the strong muscles inside grind the food with the help of small stones and other hard material which the kokorako has specially eaten to help this process
- cloaca—waste food is passed out as droppings through the cloaca and vent, explain that birds do not pass urine separately, just one lot of waste in the form of their droppings.

3. **Revise**, asking the participants to identify other parts of the kokorako while the bird is dissected:

- trachea—tube that takes air to the lungs; the trachea is connected to the nose of the kokorako which is found at the top of the beak; demonstrate where the lungs are found in the body
- sex organs—demonstrate the difference between the male organs, the testes and the eggs developing in the female kokorako
- follow the egg formation handout (page 26) and explain how the egg is started and how it grows in the body of the hen from a small to a large, hard shelled egg.

4. **Summarise** the importance of understanding the kokorako's digestive system:
 - to help us care for our kokorako
 - to help understand why kokorako might be sick.

The kokorako digestive system



What do the organs do?

Kokorako do not have teeth so food goes down the throat through the:

- oesophagus – tube for transporting food to the...
- crop – where food is stored and moistened and then carried through the oesophagus to the...
- gizzard – a strong muscular stomach with a rough gritty lining that breaks food into small pieces to then pass through the...
- duodenum – the first part of the small intestine where food is processed then passes to the...
- small intestine – the small pieces of food act with fluids from glands in its wall and bile from the...

- liver – which removes waste then the large pieces of food move to the...
- large intestine – some of the food is taken into the blood then parts of the food not digested are passed through the...
- cloaca – waste (undigested food) is passed here also urine is passed which has been carried from the kidneys.

Kokorako breath through their nose and the air passes through the:

- nasal cavity – behind the throat down the...
- trachea – then down to the...
- lungs – the air sacs; kokorako do not have sweat glands so when they get too hot the lungs let out this excess heat by opening their mouth and panting.

21. Quiz: feeding kokorako

Outcome

By the end of this session, participants will be able to:

- answer 80% of quiz correctly.

Procedure

- 1. Outline** that this session is a review of all the sessions we have learnt about feeding kokorako.
- 2. Form small groups** for students to help each other answer the quiz.
- 3. Review** answers with participants.

Question	Answer
1. Why is it necessary to give kokorako a balanced diet every day?	<ul style="list-style-type: none"> • to keep them healthy • so they grow strong • so they breed well and lay lots of eggs.
2. What are the three main food groups you should select the kokorako feed from each day?	<ul style="list-style-type: none"> • protein or body-building food - to keep them healthy - so they grow strong - so they breed well and lay lots of eggs. • energy or carbohydrate food • protective food - vitamins and minerals.
3. Name some of the foods from each group?	<p>Protein food —</p> <ul style="list-style-type: none"> • cooked fishing waste • animal offal • earthworms • insects including white ants • bean and peanut meal. <p>Energy food —</p> <ul style="list-style-type: none"> • sugarcane • cassava and sweet potato • coconut • yam and boiled potatoes • cooked taro.

	<p>Protective food —</p> <ul style="list-style-type: none"> • pawpaw and chilli • grit - burned and crushed seashell • charcoal • fruits and vegetables • crushed animal bones • salt • sand and gravel • seaweed • greenfood.
4. How often should you feed kokorako?	<ul style="list-style-type: none"> • every morning • green feed mid afternoon.
5. Calculate quantities of body building and energy food used for feeding meat chickens each day.	<ul style="list-style-type: none"> • see handout sheet on page 58 • remind participants not to forget to give clean water and green feed every day.
6. Why is it better to give your kokorako local feed?	<ul style="list-style-type: none"> • imported feed is expensive • sometimes delivery is difficult • it is better if the kokorako select the different food it needs each day rather than be forced to eat an imported mixture • local food is healthy and clean without chemicals used to produce it.
7. What special foods should you give baby kokorako for the first few weeks?	<ul style="list-style-type: none"> • boiled eggs smashed into small pieces • small grains like rice, mung beans and small corn seeds; you can sprout them first to make them soft • other kokorako foods like fruit or cooked vegetables that are smashed smaller for the baby chickens.

QUIZ: feeding kokorako



1. List two reasons why is it necessary to give kokorako a balanced diet every day?

i) _____

ii) _____

2. What are the three main food groups to select kokorako feed from each day?

i) _____

ii) _____

iii) _____

3. Name some of the foods from each group?

Group 1 _____

Group 2: _____

Group 3: _____

4. How often should you feed kokorako?

5. Calculate quantities of body building and energy food used for feeding meat chickens each day.

6. List three reasons why is it better to give your kokorako local feed?

i) _____

ii) _____

iii) _____

7. List three special foods should you give baby kokorako for the first few weeks?

i) _____

ii) _____

iii) _____

Housing kokorako:

This section contains lesson outlines to assist you to organise workshops:

22.	Types of kokorako houses	64
23.	Preparing to build	67
24.	Field visit	69
25.	Designing kokorako houses	71
26.	Quiz: housing kokorako	77

22. Types of kokorako houses

Outcome

By the end of this session, participants will be able to:

- list three types of kokorako house.

Key message

1. Kokorako houses can be built above the ground or on the ground.
2. Small kokorako houses can be used to move kokorako around the garden to prepare the soil for planting.
3. The ground around kokorako houses should be well drained to stop the kokorako house flooding.
4. Kokorako houses should be made strong to keep out dogs and pigs.

Approach

...discuss

- types of kokorako houses and their purpose

Materials

...for discussion

- * handout sheet showing the different houses.

Procedure

1. **Review** previous session ten on keeping kokorako healthy. Ask participants to list what they check around the kokorako house to keep kokorako healthy:
 - the ground around the kokorako house and yard does not become stale and unhealthy
 - the floor of the kokorako house is cleaned regularly and the manure and other material is placed on the compost heap to use later on the gardens

- the floor of the kokorako house is made from gravel material to help with drainage and keep the kokorako house dry
- the kokorako house is not overcrowded as this can cause illness and cannibalism.

Introduce this series of workshops about housing. In this first session we will look at the three types of kokorako houses and when they might be used.

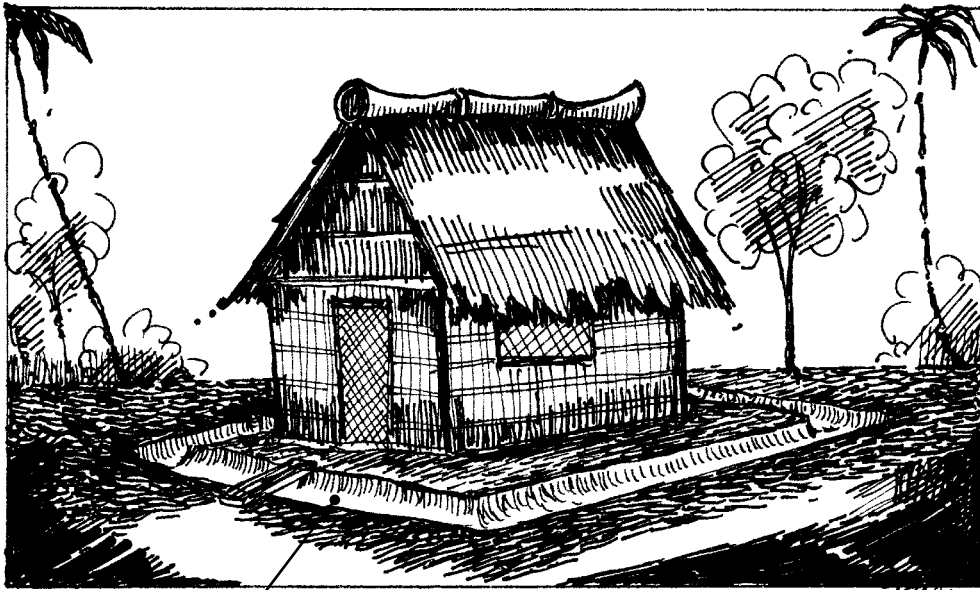
2. **Show** participants a sketch of a house on the ground. Ask participants what you would need to be careful of when building on the ground:
 - need to avoid floodwater
 - need strong walls to stop dogs and pigs getting in.
3. **Show** participants a sketch of a house above the ground. Ask participants why houses might be built above the ground:
 - to allow air to circulate underneath
 - to stop dogs and pigs digging into the house
 - to avoid floodwater.
4. **Show** participants a sketch of a moveable house and explain how it works - that it is a small house that is moved around the garden and houses up to four kokorako.
Ask participants what the benefits of this type of house might be:
 - improve the garden bed by preparing it ready for planting:
 - kokorako remove weeds
 - kokorako provide manure that improves the soil
 - kokorako turn and loosen soil for planting seeds and seedlings.
5. **Summarise** the main points of each type of house.

Types of kokorako houses

House on the ground

Kokorako houses built on the ground need:

- a raised floor to lift them above floodwater
- logs around the house to stop pigs and dogs digging under
- strong walls to stop dogs and pigs.



drainage ditch stops
kokorako house flooding

House above the ground

Kokorako houses are built off the ground to:

- allow air to circulate underneath
- stop dogs and pigs digging into the house
- avoid floodwater.

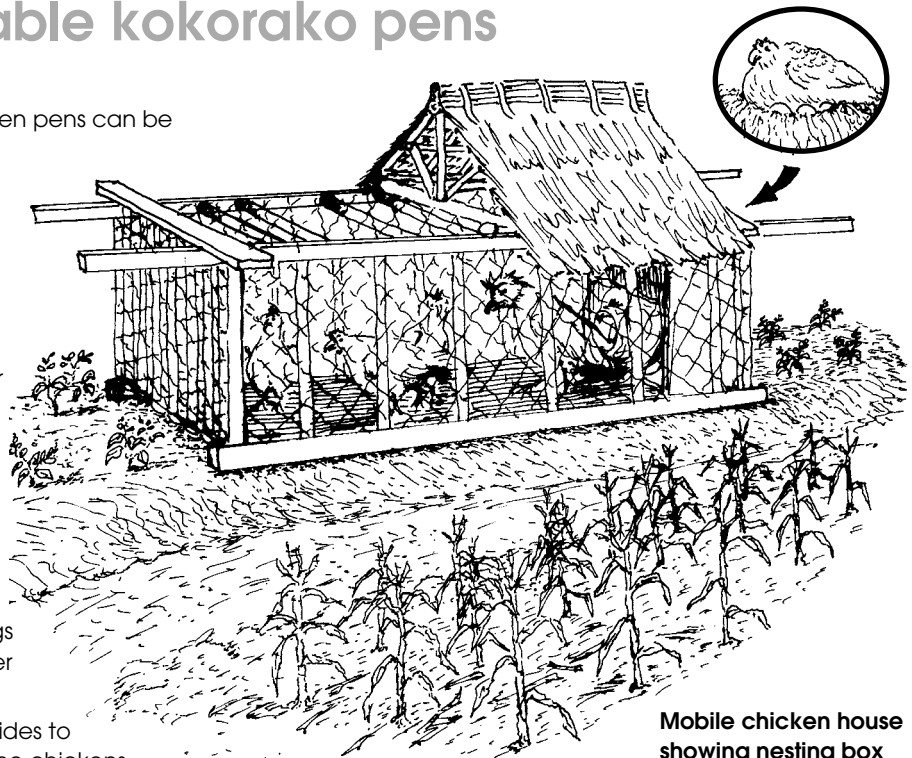


Moveable kokorako pens

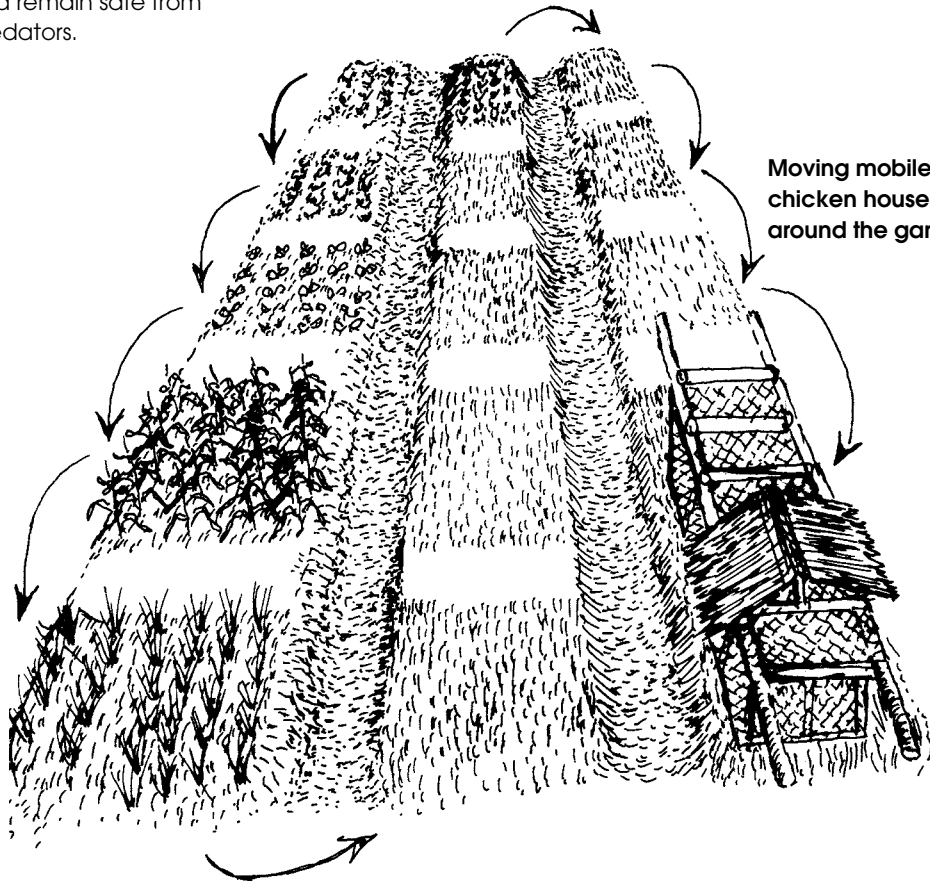
Moveable chicken pens can be constructed:

to move kokorako around to fresh ground each day; move the shade shelter with them of strong, heavier material and have strong bars to discourage dogs and pigs digging under the pen

with woven sides to ensure that the chickens stay inside with their mothers and remain safe from predators.



Mobile chicken house showing nesting box where eggs are laid



Moving mobile chicken house around the garden

23. Preparing to build

Outcome

By the end of this session, participants will be able to:

- list the things to look for in choosing the best place to build a kokorako house
- list the main features of a well designed kokorako house
- explain why you might have special kokorako houses.

Key message

1. Kokorako houses should be well made to keep kokorako safe and healthy.
2. They should shelter kokorako from the weather and protect them from pigs and dogs.

Approach

...discuss

- design of kokorako houses.

Procedure

1. Outline this session:

- choosing a good site to build a kokorako house
- talk about the main features of a well designed house
- talk about why we might have special kokorako houses.

2. Ask participants what may be the main things they look for when choosing a place to build a kokorako house:

- is land available close to the food garden?
- will security be a problem?
- are there houses close by to guard the kokorako from thieves?
- is the land dry enough to build on?

3. Brainstorm in pairs what the main features of a well designed kokorako

house might be. Bring students back together to collate their answers. Add any information that may be left out.

The main features:

- predator proof—the bottom half of the walls of the kokorako house should be made from strong sticks or boards to stop dogs, cats and pigs from breaking in; the top half of each wall should be made from closely woven sticks or bamboo to stop the kokorako escaping and to stop cats from climbing into the house
- well ventilated
- shaded
- well drained, so the birds remain healthy and safe
- provide shelter them from sun, rain and strong wind
- built from local materials
- made with separate rooms into which kokorako of different ages can be divided
- made with windows to ventilate them to keep the kokorako healthy and to stop smells.

4. Discuss with participants why you might have special houses for:

- young kokorako
- fattening kokorako for eating
- sick kokorako.

5. Summarise the main design features of a kokorako house.

Discuss the next session, a field trip, to look at where people have build their kokorako houses, what materials they have used and the size of the kokorako house.

Preparing to build a kokorako house

Before building

When planning to build a new kokorako house you need to ask:

- is land available close to the food garden?
- will security be a problem?
- are there houses close by to guard the kokorako from thieves?
- is the land dry enough to build on?

Design details

Poultry pens and houses must be:

- predator proof—the bottom half of the walls of the kokorako house should be made from strong sticks or boards to stop dogs, cats and pigs from breaking in; the top half of each wall should be made from closely woven sticks or bamboo to stop the kokorako escaping and to stop cats from climbing into the house
- well ventilated
- shaded
- well drained, so the birds remain dry and healthy

- provide shelter them from sun, rain and strong wind
- built from local materials
- made with separate rooms into which kokorako of different ages can be divided
- made with windows to ventilate them to keep the kokorako healthy and to stop smells.

Special housing

New kokorako

If possible, separate houses should be constructed on fresh ground for each batch of growing chickens. Make sure the permanent floor is cleaned well. This stops disease from spreading.

Kokorako for eating

Any young male birds kept to fatten for eating can be kept in smaller pens so they do not have too much room to move around in and lose weight.

Too much activity will burn up the condition of these meat chickens.

The mother hen and her chickens are separated from the flock in a small kokorako house. Separation ensures they receive plenty of food and water.



24. Field visit

Outcome

By the end of this session, participants will be able to:

- list materials used in the kokorako houses they visit
- identify the type of kokorako house; above the ground, on the ground or mobile

Key message

1. Kokorako houses can be made in different ways but they should all protect and shelter the kokorako.

Approach

...practical

- visit and discuss the design of the different kokorako houses.

Materials

...practical

- * organise to visit a number of different kokorako houses.

Procedure

1. **Review** previous session on main features of a well designed kokorako house.

Outline that this session will visit a number of kokorako houses to look at how they are built and where they are placed.

2. **Split** participants into small groups and handout worksheets for each group to complete at each site.

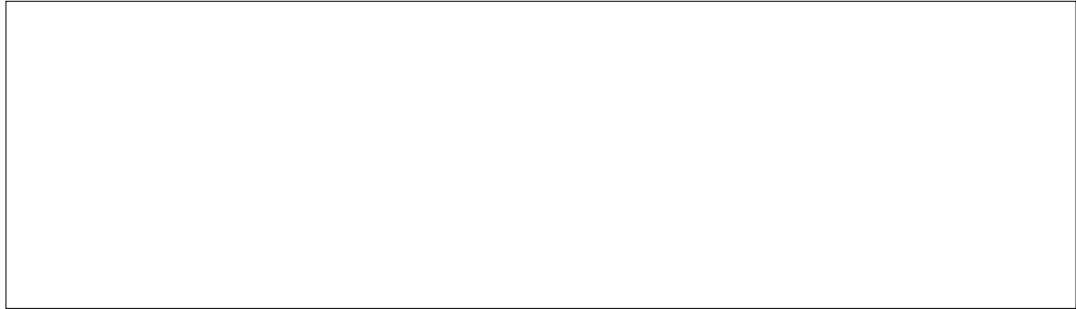
When visiting each site, introduce the main features to the participants so they can fill out the worksheet. Highlight any interesting features.

3. **Summarise** field visit on your return with the participants. Ask them:
 - what materials were used in the houses
 - what types of floor did they have
 - did all the kokorako houses have roost and nests?
 - what were the main things you liked about the houses visited?
 - what were some of the things that did not work in the houses?
 - what do you think are the main features of a good kokorako house?
 - what ideas will you try when you build your kokorako house?

Kokorako house field visit worksheet

Name of owner of kokorako house: _____

1. Draw a picture of the kokorako house



Is the kokorako house: on the ground above the ground mobile

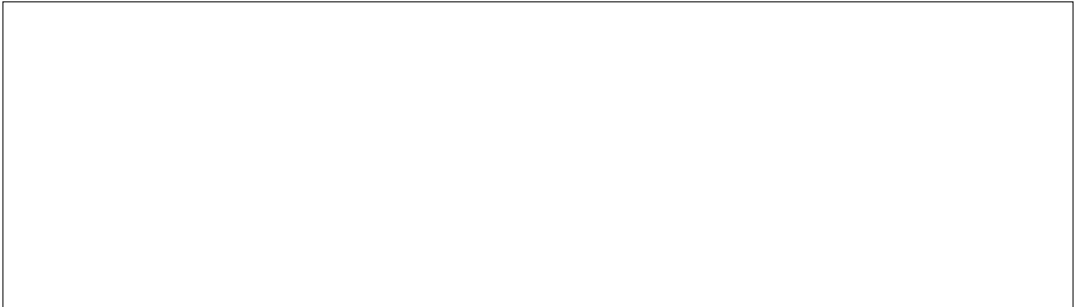
2. What materials are used to build the:

Walls: _____ floor: _____

Door: _____ Windows: _____

Nest: _____ Roost: _____

3. Draw a floor plan of a room:



4. Size of house:

How big is a room? _____ How many rooms to the house? _____

How many birds in each room? _____ Is there different birds in each room? _____

Are the birds used for: fattening/ meat eggs breeding

How big is the kokorako house: _____

5. Draw a picture of the feeder:



6. Draw a picture of the water container:



25. Designing kokorako houses

Outcome

By the end of this session, participants will be able to:

- draw a layout of the floor plan for a kokorako house
- list the types of materials you can use to build a kokorako house
- explain how to build a roost, nest, windows and doors.

Key message

1. Kokorako houses should be well made to keep kokorako safe and healthy.
2. They should shelter kokorako from the weather and protect them from pigs and dogs.

Approach

...discuss

- design of kokorako houses.

...practical

- build perch and nest.

Materials

...practical

- * timber to build perch and nest.

Procedure

1. **Review** the field visit by asking participants what they liked most of what they saw.

Outline this session will build on what they saw on their field visit by learning:

- how much space is needed for each bird
- how to lay out a floor plan for each room in a kokorako house
- the type of materials you can use to build a kokorako house
- how to design a roost, nest, windows and doors.

2. **Explain** to participants how much space is needed for different age groups:

Space needed for each kokorako of different age groups in a chicken house

Age:	Space needed:
0-5 weeks	.5 square metre
5-10 weeks	1 square metre
10-20 weeks	2.5 square metres
Adult	4 square metres

Discuss why you need separate rooms for your:

- breeding kokorako
- young kokorako
- mother hen and baby chickens.

3. **Explain** the floor plan for the kokorako house.

Explain that this floor room layout should be copied in each room of the kokorako house.

Discuss where you place these items in a kokorako room:

- perches, the free choice feeder and water container close together
- the nests for laying in a darker corner close to the door.

4. **Ask** participants what material were used in the houses they visited on the field trip. Discuss what material could be used using handout sheets on kokorako houses.

Houses for kokorako:

- should be constructed of bush materials which are available in most villages; villagers already have the skills to use these materials
- houses made from bush materials are more suited to the tropical climate than permanent materials
- houses can also be made of permanent materials like sawn timber and wire netting if you have the money
- houses made of timber and corrugated iron become too hot during the day.

5. **Demonstrate** or describe how to build

- perches
 - at the back of the kokorako house
 - as close to the roof as possible while leaving enough room for the chickens to stand
 - allowing for a 30cm length of perch per kokorako.
- nests - can be constructed of bush materials and can be disposed of after use by burning or in the compost
- doors and windows.

6. **Summarise** the main floor plan features, types of materials you can use and design of perch, nest and doors and windows.

Space needed for kokorako

Space required for different age groups in a chicken house

To keep your poultry healthy and happy you need to allow plenty of space for them in their pens and houses.

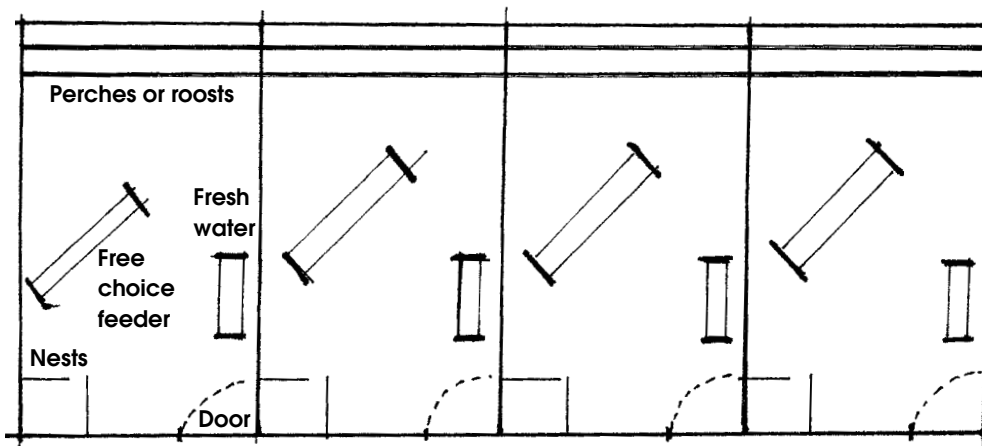
When the kokorako are small, less area is needed. As they grow older and bigger, more area is needed.

Four square metres are needed for each adult bird. Measure each square metre as one man-size step by one man-size step.

Space needed for each kokorako of different age groups in a chicken house

Age:	0-5 weeks	5-10 weeks	10-20 weeks	Adult
Space needed:	.5 square metre	1 square metre	2.5 square metres	4 square metres

You need to build a separate house for your kokorako and arrange it so that it is divided into different rooms for your breeding kokorako, young ones and mother and baby chickens.



Floor layout of rooms in a kokorako house

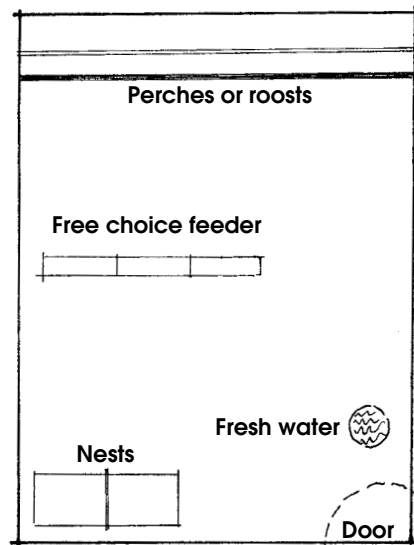
Size

Each house should be big enough to have five good-sized rooms to accommodate kokorako divided into breeding and growing groups. Each room has only kokorako of the same size.

Otherwise, you need to build four or five separate houses.

Perches, free choice feeder, water and nests

In each room you should place the perches, free choice feeder and water container close together. The nests for laying can be in a darker corner close to the door.



Floor plan for a kokorako room

Materials for a kokorako house



Houses for kokorako:

- should be constructed of bush materials; villagers already have the skills to use these materials
- houses made from bush materials are more suited to the tropical climate than permanent materials
- houses can also be made of permanent materials like sawn timber and wire netting if you have the money
- houses made of timber and corrugated iron become too hot during the day.



Put grass on floor

Replace the grass on the floor at least weekly. This helps keep the kokorako free of disease.

The used grass or leaf can put on in the compost.

Nests

Nests for layers and sitting mother hens can be constructed of bush materials. They are disposed of after use by burning or in the compost.



Roosting

Chickens perch high up as possible, out of the way of predators.

Build a roosting perch at the back of the kokorako house, as close to the roof as possible while leaving enough room for the chickens to stand. Allow for a 30cm length of perch per kokorako.

Windows and doors



A kokorako house built on the ground should have a drain made around it so it does not flood.

The floor should be of gravel or a material that drains water well.

This house has three rooms to divide the kokorako according to size and age. The area around the house is used to grow food for the kokorako, such as sorghum and green feed.



The walls of this kokorako house are made of split bamboo.

The doors are made of wire mesh on a timber frame.

The roof is made of palm leaf.

Each room in the kokorako house has perches on which the kokorako sleep, a free choice feeder and nests in which the kokorako lay their eggs.



Large windows are provided for ventilation to keep the kokorako healthy and give them fresh air. Smells escape through the windows.

The window openings are covered in split bamboo to keep the kokorako inside and to keep out dogs and other animals.

The roof protects the windows from rain.

Different materials



A kokorako house at Sasamuqa village, Choiseul Province, Solomon Islands.

The house is made of timber slats that make it strong enough to protect the kokorako against dogs. The roof is palm leaf.



Inside the slatted house showing roost to the side of the room and nesting box at the back. Grass has been placed on the floor.

The rooms are well ventilated and shelter the kokorako from the sun and rain.



A two-level kokorako house at Kastom Gaden Association, Burns Creek, Honiara, Solomon Islands.

Kokorako live in the house and in the space below. The area below is enclosed with wire mesh.

The house is divided into three rooms each with roost, nests for laying eggs and free choice feeder made of a split bamboo of three sections.

The space around the house is used to grow food for the kokorako — green feed and sorghum.

26. Quiz: housing kokorako

Outcome

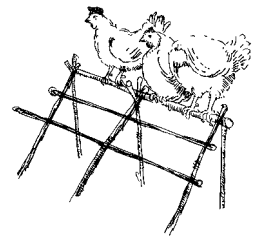
By the end of this session, participants will be able to:

- answer 80% of quiz correctly

Procedure

1. **Outline** that this session is a review of all the sessions we have learnt about housing kokorako.
2. **Form small groups** for students to help each other answer the quiz.
3. **Review** answers with participants.

Question	Answer
1. List 3 reasons why you need a special house for your kokorako?	<ul style="list-style-type: none"> • to protect kokorako from predators • to provide shelter and shade • to provide a secure place to lay eggs.
2. List 3 reasons why you should use bush materials to build this house?	<ul style="list-style-type: none"> • does not cost a lot of money • available near your village • a leaf roof and walls of local materials suit the climate and are better for the kokorako • if disease builds up, the house can be burned and a new one built.
3. List two reasons why you need to divide the kokorako house into rooms?	<ul style="list-style-type: none"> • to separate breeding, young and mother with baby kokorako • keep kokorako of different sizes together so they all feed equally.
4. Draw a floor plan of a kokorako house showing what you need to put into each room.	
5. Explain how each room should be laid out and what items are needed in each room.	<ul style="list-style-type: none"> • perches at rear of room • feeder and water on ground • nests for laying near door.
6. How do you measure the area needed for adult kokorako rooms?	<ul style="list-style-type: none"> • four square metre for each adult bird
7. List 3 problems caused if chickens are kept in houses and yards that are too crowded?	<ul style="list-style-type: none"> • sickness • fighting • cannibalism • poor breeding • broken eggs.



QUIZ: housing kokorako

1. List three reasons why you need a special house for your kokorako?

i) _____

ii) _____

iii) _____

2. List three reasons why you should use bush materials to build the kokorako house?

i) _____

ii) _____

iii) _____

3. List two reasons why you need to divide the kokorako house into rooms?

i) _____

ii) _____

4. Draw a floor plan of a kokorako house showing what you would need to put into each room

5. Explain how each room should be laid out and what items are needed in each room.

6. How do you measure the area needed for adult kokorako rooms?

7. List 3 problems caused if chickens are kept in houses and yards that are too crowded?

i) _____ ii) _____

iii) _____

Incubation and hatching:

This section contains lesson outlines to assist you to organise workshops:

27.	Broody hens	80
28.	Nests	83
29.	Storing eggs	85
30.	Hatching eggs artificially.....	87
31.	Artificial brooding of chickens.....	90
32.	Quiz: incubation and hatching	92

27. Broody hens

Outcome

By the end of this session, participants will be able to:

- describe how to identify a broody hen
- describe how to prepare a broody hen to sit on eggs
- describe how to care for a mother hen and her chicks after hatching at:
 - six to eight weeks
 - eight to twelve weeks
 - twelve to fifteen weeks.

Key message

1. Caring properly for broody hens and their chicks will help more chickens survive.

Approach

...discuss

- caring for broody hens and her chicks.

Procedure

1. **Review** previous Session Five on selecting hens for breeding. Ask participants what are the characteristics to look for in choosing hens for your breeding flock:

- very active
- search for their own food
- strong and healthy young fowls
- good egg layers
- good as broody hens.

Introduce this series of workshops about incubation and hatching by explaining that the sessions will help us increase the number of chicks that survive after hatching from the egg.

In this first session we will look at how to look after broody hens.

2. **Ask** participants what a broody hen is — a kokorako that is ready to hatch baby chickens from eggs by sitting on the eggs for three weeks.

Ask participants how you can recognise a broody hen — because she wants to sit on the nest all day and night and she will complain when you take her eggs.

Mention that taking eggs away from the hen each day slows the hen from going broody.

3. **Explain** that the way to hatch a lot of chickens quickly is to organise your broody hens so that two or three or more set at the same time. The chickens will then all hatch around the same time.
4. **Explain** how to prepare your broody hens so that eggs will hatch around the same time:
 - provide a small room for each nest
 - place eggs under hens at the same time.
5. **Explain** how to care for a mother hen and her chicks after hatching:
 - if your broody hens are tame, remove the chicks from under all hens on the first or second day after hatching and place them under a single hen
 - the other hens can be given another clutch of eggs to start again — explain that this can be done two or three times without harming your hens
 - **for the first six to eight weeks** the mother hen and her chickens can be fed and protected in a moveable pen
 - **at eight weeks old** the mother can be taken from the chicks and returned to the breeding pen — move the chicks to a larger growing pen
 - **at 12 to 15 weeks** separate the chicks into male and female so they can be given particular feed requirements depending on whether they are to be layers or kept for fattening.
6. **Summarise** the care of broody hens.

Incubation and hatching

Problems with hatching young village chickens

A village hen in the Solomon Islands may be lucky enough to hide a clutch of eggs for the full 21 days required to hatch them.

Afterwards, when she emerges from her hiding place with her chicks searching of a feed, they may:

- be killed by predators such as cats, dogs or hawks
- die from disease
- die from lack of food.

It is mainly the shortage of suitable chicken feed which causes the chickens to die of starvation.

Keep chickens safe

Keeping kokorako in a kokorako house for most of the day and feeding them properly will encourage them to lay their eggs in the house where they are safe.

The eggs can be easily collected.

Two simple changes

Two simple changes are all that is needed to ensure a better result:

- keep the poultry inside predator-proof fences or yards or on a small island away from predatory animals
- each day after the chickens hatch, provide fresh drinking water and grated coconut, greens or pawpaw and cooked egg in shallow bowls.

To make sure you increase the number of chickens, try and manage the hens which are incubating eggs.

If your poultry is kept in yards and special poultry houses you can control their:

- mating
- collection of eggs
- feeding.

Chicken houses and yards protect them from the weather and from predators.



Handles for carrying moveable chicken house

Wire mesh reinforced with timber to keep away dogs

Grass and leaves are used to shade chickens

Hessian bag used to shelter mother and her chicks

For the first six to eight weeks the mother hen and her chickens can be fed and protected in a moveable pen

Managing broody hens and young chicks

What is a broody hen

- a broody hen is a kokorako that is ready to hatch baby chickens from eggs by sitting on the eggs for three weeks
- you can recognise a broody hen because she wants to sit on the nest all day and night — she will complain when you take the eggs from under her.

Taking eggs away from the hen each day slows the hens in going broody.

Care and management

One of the most important lessons to learn about keeping village kokorako is the caring and managing of your broody hens.

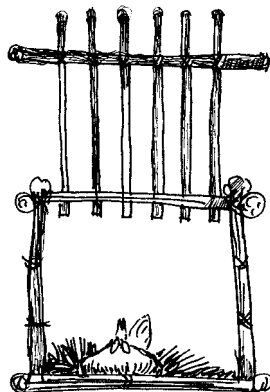
You should work towards raising a small flock consisting of a few hens that are good mothers to their chickens.

The hens should also be tame and easy to handle through the entire egg-hatching and chicken-raising times.

Hatching a lot of chickens

A way to hatch a lot of chickens quickly is to organise your broody hens so that two or three or more sit at the same time. The chickens will then all hatch around the same time.

- a broody hen does not have to hatch its own eggs
- you can collect eggs from different hens and mix them under one broody hen
- the hen will accept any chickens she hatches as her own
- it makes no difference that the chickens might be of different colours.



Broody hens ready to sit

Quiet hens are important to the success of this method.

When you have two or three broody hens ready to sit on eggs, make sure they have a small room of their own for each nest.

Place eggs under the hens at the same time. It is best to do this at night so you do not disturb the hens too much. All the broody hens should hatch their eggs around the same time.

After hatching

If your broody hens are tame or not too wild, you can remove the chickens from under all hens on the first or second day after hatching. They can all be placed under a single hen.

Supply new eggs for broody hens

The other hens can be given another clutch of eggs to start again. Make sure you do this at night so they do not get too upset.

When all the eggs have hatched, provide each chicken with a new set of eggs and repeat the process.

This can be done two or three times without harming your hens. You will be surprised just how many chickens a hen can care for.

Looking after new chicks

The mother hen and her chickens can be fed and protected in a moveable pen for the first six to eight weeks to make sure the chicks survive.

The chickens should be partly feathered by this age and should be fairly self-reliant.

Move and separate chicks

When the chicks are eight weeks old the mother can then be taken from the chicks and returned to the breeding pen.

Move the chicks to a larger growing pen. They will still need to be protected from the weather and from predators.

The chicks can be separated into male and female at 12 to 15 weeks so they can be given particular feed requirements depending on whether they are to be laying birds or fattened roosters for eating.

28. Nests

Outcome

By the end of this session, participants will be able to:

- describe what makes a good nest
- estimate how many nests are needed
- describe the construction of a nest.

Key message

1. Provide nests inside the kokorako house so the kokorako will lay their eggs there, where they can be easily collected.

Approach

...discuss

- what makes a good nest

...practical

- how to build a nest

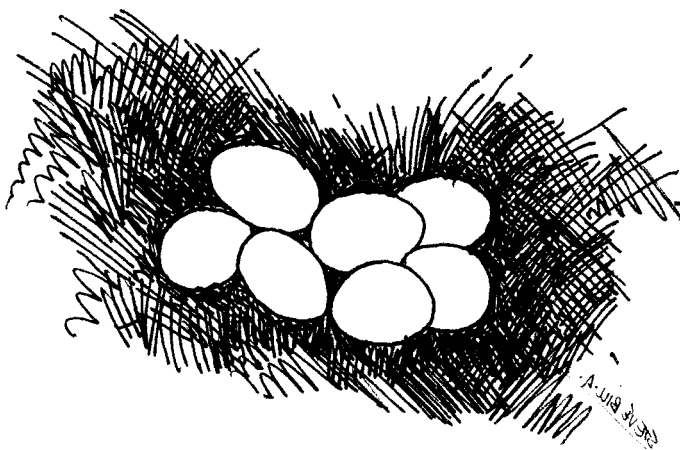
Materials

...for practical

bush materials such as leaf for weaving into a shelter
cut grass for the floor of the nest.

Procedure

1. **Review** previous Session 24, Field Visit. Ask participants where nests were placed in the kokorako houses. Outline that this session will look at what makes a good nest and at the construction of nests.
2. **Ask** participants where they have found eggs laid around the village. Explain that they were probably:
 - hidden in a tree hollow
 - under a big bush
 - inside your house.
3. **Explain** that keeping kokorako in a house allows you to provide nests inside the kokorako house so the kokorako will lay their eggs there.
4. **Ask** participants what makes a good nest. it should:
 - be placed in a dark and private place
 - be made so that other hens cannot watch the hen lay
 - have soft materials like cut grass for the hens to lay in.
5. **Explain** you will need only one or two nests for every ten hens.
6. **Demonstrate** the construction of a nest. Ask students what were the nest like at the kokorako houses we visited. Explain the materials that can be used. Demonstrate where to place the nest in the kokorako house.
7. **Summarise** the main points of the types of nests you can build and the materials that can be used.



Nests

Where do village kokorako go to nest?

Kokorako that live outside of a house lay their eggs in hidden places such as tree hollows, under a big bush or inside your house. The eggs are difficult to find.

Keeping kokorako in a house allows you to provide nests inside the kokorako house so the kokorako will lay their eggs there.

What makes a good nest?

- provide a dark and private place for the hens to lay eggs
- should be made so that other hens cannot watch the hen lay; the other hens might break and eat the eggs
- nests should have soft materials like cut grass, rotted wood and sand for the hens to lay in.

How many nests do you need?

You will need only one or two nests for every ten hens.

What material can you use to build a nest?

A nest made of bush materials feels natural to the village hen.

Imported hens like this type of nest too because it can be built so that it is dark and can be placed in a quiet corner of the house. The nest should have a top on it and not open boxes like some people believe imported hens use.



Examples of nests

29. Storing eggs

Outcome

By the end of this session, participants will be able to:

- describe where to store eggs
- describe different ways of making an egg storage container
- describe how often you turn eggs that are going to be used for hatching.

Key message

1. Store eggs in a container in a safe place.
2. You need to turn eggs a least twice a day.

Approach

...discuss

- where are good places to store eggs

...practical

- how to build an egg storage container

Materials

...for practical

- leaf for weaving into an egg container
- sago logs for making an egg storage container.

Procedure

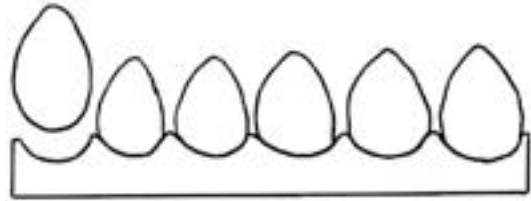
1. **Outline** this session. Once you have built a good nest, you need to make sure you collect the eggs each day and store them properly.
We will look at where to store eggs, how to make a storage container and when to turn the eggs that are going to be used for hatching.
2. **Ask** participants where would be a good place to store eggs:
 - in your own house
 - in a cool part of your house away from where they can be stolen or eaten by rats.
3. **Demonstrate** the construction of an egg storage container:
 - weaving an egg container from leaf material
 - making an egg container from sago wood.
4. **Explain** turning the eggs that are going to be used for hatching:
 - you need to turn them over a least twice a day so that the air sac inside the egg does not stick to the inside of the shell and stop the chicken from hatching.
5. **Summarise** the main points of the types of nests you can build and the materials that can be used.

Storing eggs

Once you have built a good nest, you need to make sure you collect the eggs each day and store them properly.

Where to store your eggs

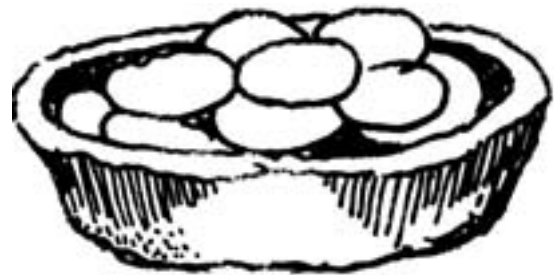
- you will need to store the eggs your hens produce safely in your own house
- eggs should be stored in a cool part of your house away from where they can be stolen or eaten by rats.



Egg storage containers

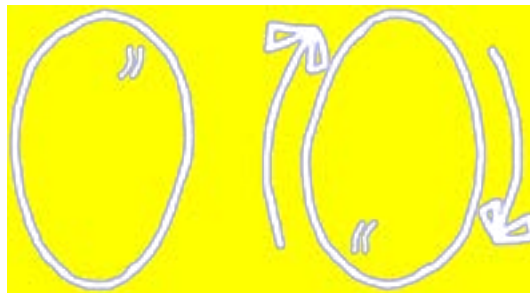
Making an egg storage container

1. You can weave an egg container from leaf material.
2. An egg container can also be made from sago wood.

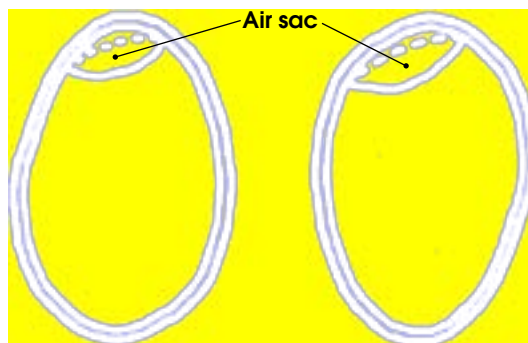


Turning your eggs for hatching

When you store eggs for hatching you need to turn them over a least twice a day so that the air sac inside the egg does not stick to the inside of the shell and stop the chicken from hatching.



The eggs should be turned end to end twice a day in their storage container



The air sac inside the egg does not stick to the inside of the shell and stop the chicken from hatching if you turn it.

30. Hatching eggs artificially

Outcome

By the end of this session, participants will be able to:

- explain what an incubator is
- describe how to manage eggs in the incubator
- describe how to keep incubator clean
- explain how to check eggs for their development.

Key message

1. An incubator can be used to hatch many eggs at a time.
2. When we turn the eggs and keep the incubator clean we will hatch more chicks.

Approach

...discuss/practical

- how an incubator works.

Materials

...for practical

- an incubator machine
- electricity supply
- eggs ready for hatching.

Procedure

1. **Outline** this session. Once you have collected fertile eggs for hatching you can use a machine instead of a broody hen to hatch chickens.
We will look at a machine that can hatch eggs and learn how to manage eggs in this machine.
2. **Explain and show** the parts of an incubator and how it works:
 - an incubator copies how the hen incubates the eggs

- it artificially hatches eggs
 - you need a reliable electricity supply to keep the eggs warm for three weeks before hatching.
3. **Explain and demonstrate** how to manage the eggs in the incubator:
 - the hen sits on the eggs to keep them warm until they hatch; the incubator is made to keep the eggs warm
 - **the hen** keeps turning the eggs over and moves them around in the nest so they are kept at the right temperature
we turn and move the eggs in the incubator to make sure they hatch properly
 - **the hen** turns and moves the eggs about every 20 minutes but we need not do the same
we turn the eggs at least four times a day; turning of eggs is not necessary after 18 days in incubation.
 4. **Explain how to clean the incubator:**
 - remove egg chips and dusty down produced by the hatching chickens
 - cleaning will help prevent disease which could kill the chickens growing inside the egg.
 5. **Demonstrate** how to check eggs for growth:
 - pass the egg over a bright light at night — the light will show the inside of the egg
 - all 'clear' or bad eggs should be thrown away to leave space for the good eggs to hatch.
 6. **Summarise** by asking participants what the benefits of having an incubator are, how we look after the eggs while they are in the incubator and how we know which are the good or bad eggs.

Hatching eggs artificially

What is an incubator

- to artificially hatch eggs you need a machine called an incubator
- a reliable electricity supply is needed to keep the eggs warm for three weeks before hatching.

How to manage the eggs in the incubator

Eggs take 21 days to hatch.

Incubators copy how the hen incubates the eggs:

- **the hen** sits on the eggs to keep them warm until they hatch; the incubator is made to keep the eggs warm
- **the hen** keeps turning the eggs over and moves them around in the nest so they are kept at the right temperature

we turn and move the eggs in the incubator to make sure they hatch properly

the hen turns and moves the eggs about every 20 minutes but we need not do the same

we turn the eggs at least four times a day; turning of eggs is not necessary after 18 days in incubation

the moving of the eggs should stop three days before the eggs are due to hatch

good eggs should now be left undisturbed in the incubator until they hatch on the twenty-first day.

Keep the incubator clean

Incubators must be kept clean inside, especially when eggs are hatching:

- remove egg chips and dusty down produced by the hatching chickens
- cleaning will help prevent disease which could kill the chickens growing inside the egg.

mark on top



turn egg until the mark is...



...on the bottom - next time you turn, the mark will be on the top

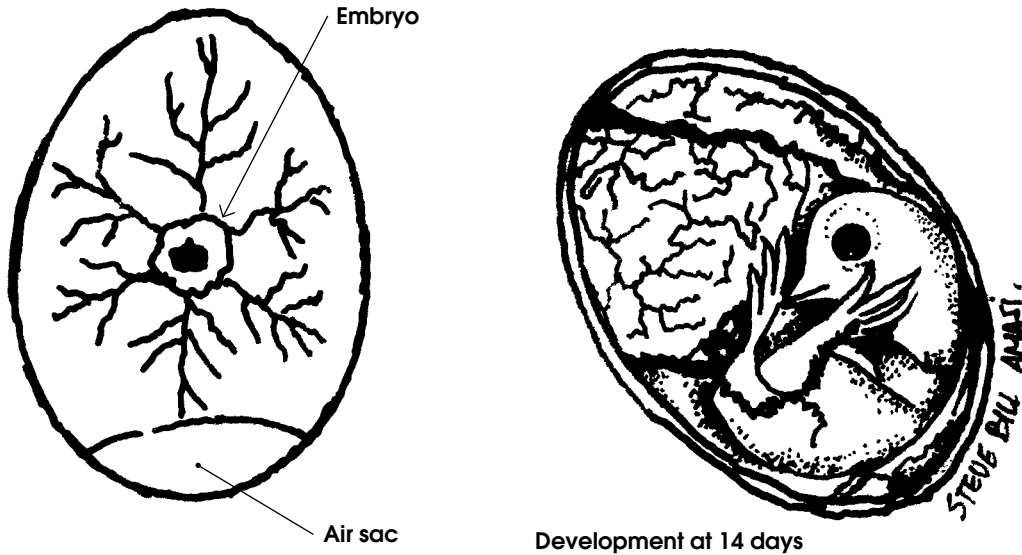


Turn and move the eggs in the incubator to make sure they hatch properly - do not allow the eggs to cool too much while turning



The eggs in this incubator are marked on one side so it will show which side has been turned

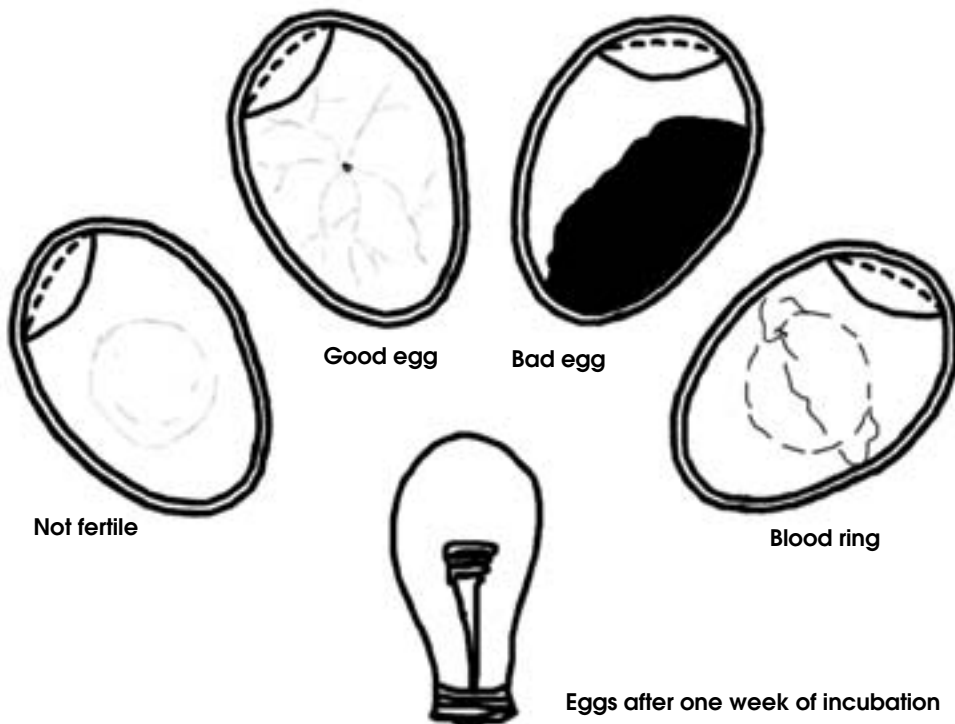
Development of a hatching egg



Checking eggs for development

When artificially incubating eggs, check them after two weeks to make sure the chicken is developing:

- pass the egg over a bright light, like a strong torch, at night
- the light will show the inside of the egg
- all 'clear' or bad eggs should be thrown away to leave space for the good eggs to hatch.



31. Artificial brooding of chickens

Outcome

By the end of this session, participants will be able to:

- explain what a brooder is
- describe how to manage chicks when they hatch and when to place them in the brooder
- describe how to make a brooder
- identify when to move chicks out of the brooder.

Key message

1. A brooder ensures the survival of chicks during their first three weeks of life.
2. Carrying chicks properly reduces injury to them.

Approach

...discuss/practical

- how a brooder works and how to carry chicks.

Materials

...for practical

kerosene or other lamp to provide heat to keep the chickens warm at night

- cold brooder chicks, if available, to demonstrate the correct way to carry them.

Procedure

1. **Outline** this session. Once eggs have hatched we can use a machine instead of a broody hen to keep chicks warm. We will learn how to manage young chicks using a brooder.
2. **Explain** what to do when chicks hatch:
 - do not help chickens break out of their egg; just remove the left over broken shell a few times through the

day so they do not cover the eggs still in hatching

- as the chickens dry out after hatching, place them in the brooder under the lamp with a shallow dish or water to drink; the chickens should be able to easily reach the water; the dish should not be very deep otherwise the chickens could drown
- the chickens do not need feed on their first day, there is still food in their bodies from inside the egg.

3. **Describe and show** examples of brooders and how they work:

- a kerosene or other lamp can be used to artificially brood chickens for their first three weeks — the lamp is used through the night when it is cooler
- for cold brooding, a clean box with grass inside can be used or, if you have electricity, a normal light can be used — the box is divided into sections with only a few chickens in each section for the first two weeks.

4. **Explain** when it is time to move chicks out of the brooder:

- after three or four weeks in the brooder, the chickens should have enough feathers to keep them warm if they are kept in a weatherproof house and allowed into the sunshine during the day.

5. **Demonstrate** how to carry chicks — participants take a turn at carrying if you have enough chicks.

6. **Summarise** by asking participants about the benefits of having a brooder, when do you transfer chicks to the brooder and when do you move chicks out of the brooder.

Artificial brooding of chickens

What is a brooder

Chickens can be artificially brooded without a using a broody hen.

A brooder is a small, warm and dry house that replaces the work of the mother hen.

What you can do when the chicks hatch

- do not help chickens break out of their egg; just remove the left over broken shell a few times through the day so they do not cover the eggs still in hatching
- as the chickens dry out after hatching, place them into the brooder under the lamp with a shallow dish or water to drink; the chickens should be able to easily reach the water; the dish should not be very deep otherwise the chickens could drown
- the chickens do not need feed on their first day because there is still food in their bodies from inside the egg.

What materials do we need for a brooder?

- a kerosene or other lamp can be used to artificially brood chickens for their first three weeks — the lamp is used through the night when it is cooler
- the chickens can be kept in the sun during the day.

Cold brooder

For cold brooding, a clean box with grass inside can be used or, if you have electricity, a normal light can be used.

The box is divided into sections with only a few chickens in each section for the first two weeks.

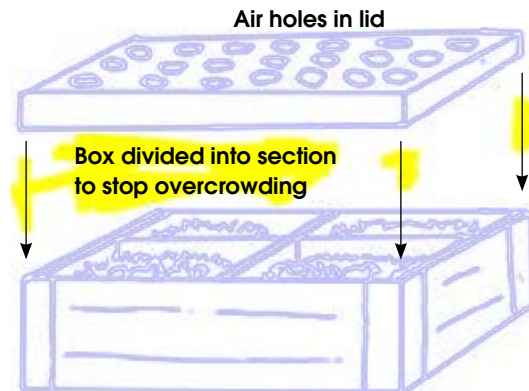
This prevents chickens overcrowding and killing themselves when they are newly-hatched and weak.

Moving chicks out of the brooder

After three or four weeks in the brooder, the chickens should have enough feathers to keep them warm if they are kept in a weatherproof house and allowed into the sunshine during the day.



A kerosene lantern can be used to artificially brood the chickens for the first three weeks of their life. This is used through the night time when it is cooler. Chickens can be kept in the sun during the day.



Cold brooder

The room in the kokorako house used for growing chickens should be weatherproof and dry and keep out predators such as cats, dogs and pigs.

Carrying baby chickens

Baby chicken should be handled carefully - regular handling will keep them quiet as they grow. It is good for the children to play with chickens for part of the day as long as they carry them carefully. It will help to tame your kokorako and make their management easier.

32. Quiz: incubation and hatching

Outcome

By the end of this session, participants will be able to:

- answer 80% of quiz correctly.

Procedure

1. **Outline** that this session is a review of all the sessions in which we have learned about the incubation and hatching of kokorako.
2. **Form small groups** for students to help each other answer the quiz.
3. **Review** answers with participants.

Question	Answer
1. What does it mean if a hen is broody?	<ul style="list-style-type: none"> • the hen is ready to sit on eggs to hatch them
2. How long does it take for eggs to hatch?	<ul style="list-style-type: none"> • 21 days
3. Can you place eggs from different hens under a broody hen?	<ul style="list-style-type: none"> • yes; the hen will hatch all of the eggs.
4. How many eggs can one hen sit on?	<ul style="list-style-type: none"> • this depends on the size of the hen; mostly, from 10 to 15.
5. How do you store eggs?	<ul style="list-style-type: none"> • in a container in a cool part of your house where they are safe from predators; if you keep eggs for one or two weeks waiting to hatch them you should turn the eggs over each day (demonstrate how to do this)
6. What are the main things you need to do to make a nest for your kokorako?	<ul style="list-style-type: none"> • make it so that it provides privacy • keep it weatherproof and dry • provide soft material on the floor of the nest • place the nest close to the door of the room so that the eggs can be collected easily and broody hens can be organised properly.
6. What is an incubator?	An incubator is a machine for artificially hatching eggs.
6. What is a brooder?	A brooder is a small, warm and dry house that replaces the work a mother hen does in keeping her young chicks warm.

QUIZ: incubation and hatching

1. What does it mean if a hen is broody?

2. How long does it take for eggs to hatch?

3. Can you place eggs from different hens under a broody hen?

4. How many eggs can one hen sit on?

5. How do you store eggs?

6. List three things you need to do to make a nest for your kokorako?

i) _____

ii) _____

iii) _____

7. What is an incubator?

8. What is a brooder?

Page for notes:

Making use of kokorako:

This section contains lesson outlines to assist you to organise workshops:

33.	Eat kokorako—preserve wildlife	96
34.	Mulching gardens	98
35.	Quiz: making use of kokorako	100
36.	Self assessment	101

33. Eat kokorako – preserve wildlife

Outcome

By the end of this session, participants will be able to:

- identify scarce wildlife used in the village diet
- identify scarce wildlife that can be replaced with chickens as food, so that the wildlife is conserved.

Key message

1. People require protein for a healthy diet. Many wild animals are used to provide this protein.
Unfortunately, the rare and valuable wildlife of some Pacific islands is threatened.
Wildlife needs to be preserved. This is can sometimes be done by eating chicken instead of the wildlife.

Approach

...discuss

- importance of preserving our wildlife.

Materials

...for discussion

- copy handout sheet or use flipchart paper; break into small groups to complete questionnaire; groups report back on their findings; trainer writes information on blackboard or flipchart and reconciles differing findings.

Procedure

1. **Introduce** this series of workshops about making use of kokorako.
In this first session we will look at how to preserve our wildlife and eat kokorako instead of eating our wildlife.

2. **Explain** how it is important to preserve the wild jungle fowl.

In countries like the Solomon Islands, where wild populations of the original jungle fowl remain, there are mixtures of this self-sufficient wild fowl with the village kokorako. Every effort should be made to obtain breeding roosters from areas where there is the possibility of jungle fowl existing in the rooster's breeding background.

The wild jungle fowl is now a protected species under the Solomon Island Wildlife Act. Catching and killing this fowl should now be discourage. Instead, people should be educated to protect and conserve it like other wildlife.

3. **Form small groups** to complete questionnaire. Groups report back and trainer asks:
 - what is the main wildlife used by villages?
 - is it important to preserve wildlife?

Questionnaire

1. Ask older people in the village what type of wildlife they found in earlier times.
2. Ask these older people if there is more wildlife today than in earlier times.
3. What wildlife is still taken from the: bush; sea; river:
4. Draw a picture of the wildlife you have seen
5. Is any of this wildlife scarce?
6. Circle your drawing above to show the scarce wildlife.
7. Can scarce wildlife be replaced by chickens as food?
8. How could you introduce the use of village chickens as food instead of wildlife into your community?

4. **Summarise** by stating the importance of using village chickens rather than wildlife as food. Ask participants how they might do this in their village.

Use kokorako for food — preserve wildlife

1. Ask older people in the village what type of wildlife they found in earlier times:

2. Ask these older people if there is more wildlife today than in earlier times:

3. What wildlife is still taken from the:

bush: _____

sea : _____

river: _____

4. Draw pictures of the wildlife you have seen:

5. Is any of this wildlife scarce? _____

6. Circle your drawing above to show the scarce wildlife.

7. Can scarce wildlife be replaced by chickens as food? _____

8. How could you introduce the use of village chickens as food instead of wildlife into your community?

34. Mulching gardens

Outcome

By the end of this session, participants will be able to:

- explain how to use weeds and waste plants to produce mulch in the kokorako house
- demonstrate how to mulch a garden using waste from the kokorako house.

Key message

1. We can use waste from the kokorako house as mulch to help improve the soil and grow healthy plants.

Approach

...discuss

- using waste from kokorako house as mulch.

Materials

...for discussion

- a garden, preferably with a kokorako house nearby.

Procedure

1. **Introduce** this session on using kokorako house floor waste as mulch.
2. **Explain** how waste leaves and plant material can be thrown into the kokorako yard instead of burning it. Burning is a waste—you can use plant material on your garden. When the kokorako house and yard is cleaned, the waste materials can be placed on the garden as a fertiliser. This can be done on those islands where using manure is not tambu (tabu; taboo).

3. **Visit** a kokorako house and explain:

- most Pacific Islanders like to keep their villages clean and tidy; they sweep the fallen leaves and branches each day
- another way to keep our village environment in good condition is to place the leaves and branches inside the chicken house; there, the chickens will take insects from the leaves and might eat some of the leaves
- this is a better use of the leaves than sweeping and burning them; burning causes pollution in the air and wastes the compost value of the leaves and sticks that are swept up
- when weeding the garden, put all the weeds into the kokorako houses first.

4. **Demonstrate**, using a kokorako yard:

- placing plant wastes into the chicken yard
- how the broken down leaves and branches mix with the chicken manure on the floor of the chicken yard and house
- how to move the wastes onto the garden as mulch.

5. **Explain**, the benefits of mulching the soil:

- helps plant to grow strong
- protects the soil
- keeps water in the soil
- stops erosion.

6. **Summarise** the importance of using kokorako waste as mulch on the garden.

Mulched gardens

Mulch in the garden

When we put mulch on our gardens we copy what happens in the bush.

Over time, the mulch on our gardens breaks down just like the leaves in the bush. This broken down mulch is food for our crop plants.

- the mulch layer is made up of organic material such as cut grass and leaves placed on the soil in the garden
- the mulch layer needs to be replaced when it has broken down.

Using floor waste from the kokorako house as mulch

Keeping your village tidy

Most Pacific Islanders like to keep their villages clean and tidy; they sweep the fallen leaves and branches each day.

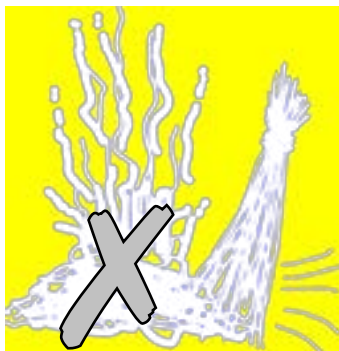
Throw leaves and branches inside kokorako house

Another way to keep our village environment in good condition is to place the leaves and branches inside the chicken house; there, the chickens will take insects from the leaves and might eat some of the leaves

Mulching is better than burning

This is a better use of the leaves than sweeping and burning them; burning causes pollution in the air and wastes the fertiliser value of the leaves and sticks that are swept up

When weeding the garden, put all the weeds into the kokorako houses first.



Burning leaves causes pollution in the air and wastes the fertiliser value of the leaves and sticks that are swept up

Why use mulch?

- **mulch help plants grow strong**
when we use mulch on our gardens we help our plants to grow strong.
mulch provides nutrients (food) for our plants to grow.
- **mulch protects our soils**
mulch stops the soil being washed away during heavy rain.
- **mulch keeps water in the soil for the plants**
our plants do not dry out so quickly.
- **mulch cools the soil**
roots don't get damaged.

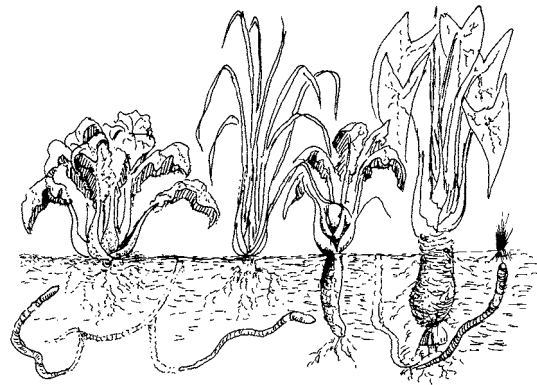


Soil problems

No mulch

Soil without mulch:

- dries out—no water for the plants
- gets hot—roots can be damaged
- has too little food for soil organisms—worms
- leave little nutrients for the plants



35. Quiz: making use of kokorako

Outcome

By the end of this session, participants will be able to:

- answer 80% of quiz correctly.

Procedure

1. **Outline** that this session is a review of all the sessions we have learnt about housing kokorako.
2. **Form small groups** for students to help each other answer the quiz.
3. **Review** answers with participants.

Question	Answer
1. How could you introduce the use of village chickens as food instead of wildlife into your community?	
2. What do you do with waste from the floor?	<ul style="list-style-type: none">• use it in the garden
2. What is the benefit of mulch to the garden?	<ul style="list-style-type: none">• helps plant to grow strong• protects the soil• keeps water in the soil• stops erosion.

36. Self assessment

Outcome

By the end of this session, participants will be able to:

- list their findings to develop their improved kokorako system.

Key messages

1. Completing the assessment provides information to help participants improve their kokorako keeping.

Approach

...discuss

- participants complete checklist.

Materials

...for discussion

- hand out assessment checklist; individuals complete checklist and report back; trainer summarises.

Procedure

1. **Review** the benefits of improved kokorako keeping in the village.
2. **Complete** the assessment checklist by participants, individually.
3. **Review** checklist and ask:
 - what things have you learned in the course?
 - what things have you learned that you like?
 - what things have you learned that you did not understand or that may not have been useful?
 - what do you think is the most important things in keeping kokorako?
 - what will you be doing to set up your system when you leave this workshop?
4. **Thank participants** for being involved in the workshop.

Encourage students to continue to learn from each other.

Wish them success in their new business and suggest they can ask for help any time.

Self assessment checklist

Compile information to assess what you need to maintain an improved kokorako system.

Number of kokorako

Have you got enough kokorako to start a chicken-keeping project? _____

Do you want to grow kokorako for eggs or meat? _____

Do you need more hens? _____ Do you need more roosters? _____

Type of kokorako

What type of kokorako do you have? _____

Do you need an imported variety? _____

Eggs and hatching

How many eggs do you produce a day? _____

Do the kokorako produce enough eggs and meat? _____

Can you improve you system to produce more eggs and meat? _____

How can you improve your breeding system? _____

What would you do when chickens are sick? _____

Feeding

Do you grow enough food for your kokorako? _____

What will you grow in the garden for your kokorako? _____

Predators

How will you protect your kokorako from predators? _____

Housing

How will you house your kokorako? _____

HANDOUT FOR STUDENTS

Checklist for trainers

Use this checklist to assess participants kokorako keeping.

Housing		Comment
1. Is the house built the right way?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
2. Are there enough separate rooms with plenty of floor space for each age group of kokorako“?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
3. Does each room have the right floor plan to suit the kokorako? (eg, nests in the right place with soft material in them for laying hens)	<input type="checkbox"/> YES <input type="checkbox"/> NO	
4. Are there permanent feeders and waterers for meat chickens?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
5. Are there perches for layers and breeders?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
6. Are the kokorako safe from dogs, cats and pigs?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
7. Are the lower walls strong enough to stop predators digging their way into the kokorako house?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
8. Do the walls allow air to circulate but keep out the rain?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Feeding		
1. Are the kokorako fed the three food groups every day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
2. Is there fresh, clean water for the kokorako every day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
3. Is the right amount of food provided each day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
4. Are no food scraps left for rats at night?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
5. Are the kokorako given small amounts of new food or food to use to tame them during the day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Kokorako		
1. Do all the kokorako look healthy?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
2. Are the kokorako crowded in their rooms?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
3. Are the kokorako kept in their house and pen most of the day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
4. Are the kokorako easy to catch or are they wild?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
5. Is there a plan to let one room of kokorako walkabout each afternoon?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
6. Does someone make sure the kokorako house is shut every night and that all the kokorako are inside?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
7. Is there someone guarding the kokorako every day and visiting them through the day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
8. Are the eggs collected every day?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
9. Are the eggs stored properly?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
10. Is there one rooster with the right number of breeding hens?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
11. Are different ages and sexes of kokorako kept in separate rooms?	<input type="checkbox"/> YES <input type="checkbox"/> NO	



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Guide for trainers:

This section contains information to assist you to organise workshops:

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Planning your training program

The Participatory Technology Development (PTD) methodology we use was modelled on the experience of farmer groups in Africa and other countries.

It has been reported in the reference journal *LEISA (Low External Input Sustainable Agriculture)* and in the book *Developing Technology With Farmers—A Trainer's Guide for Participatory Learning* (1997; van Veldhuizen and others; ETC Netherlands: Zed Books, London).

1. Planning the training workshops

Here we plan the workshops through which the farmers will acquire skills.

Scheduling the workshops is done with the farmers so training does not conflict with times of intensified farming activity or cultural obligation.

2. Training program implementation and monitoring — help farmers find solutions

To use the PTD process, we encourage farmers to try out some of the potential solutions and techniques in their fields.

We help farmers find solutions to their problems. We don't come up with the answers ourselves, instead we try to help farmers solve their own problems or find alternatives.

3. Farmer field trials

The farmer field trials allow farmers to assess potential solutions for themselves. On the basis of their experience during the field trials, they can decide for themselves whether they want to adopt the techniques and new ideas in their own gardens.

The farmer field trials can continue for some time. When the trainers return for follow-up visits, they organise a tour of the farmer field trials so the group learns how the trials went,

what problems were encountered and what solutions were tried.

Innovative farmers are encouraged to discover their own solutions and then share their experience with others.

4. Monitor progress

While the program of workshops and field visits are being implemented, we **monitor** them so we gain some idea of how they are progressing and if there is a need to modify the program.

If necessary, the program can be evaluated after it has ended so we can improve on our work in future.

5. Sharing results

After all of the trials have been concluded, we organise workshops for the farmers where they share their findings. This way, we develop a group conclusion to the experimentation and assessment.

A series of workshops can be held in the local language and we can ask some of the experienced, innovative farmers to become involved in facilitation and to share their knowledge.

Farmers are encouraged to talk about their experiences with other farmers.

Sustaining innovation

Led by the innovative farmers and promising future leaders, the PTD process can be expanded into other villages. This is done through farmer tours and exchanges where groups of farmers visit each other's gardens to see the innovations being made there.

In this way, an expanding network is developed. This leads to the spread of innovation because the farmers become empowered to analyse, understand and find their own solutions to their own problems.

Planning the workshop

Training should be practical

Kastom Gaden Association trainers have developed a three stage training approach that emphasises practical activities:

- **talk about it**—explain the technique and the benefits of using it
- **see it**—demonstrate the technique or skill so the trainees see it being done
- **do it**—assist the trainees to acquire the technique by doing it for themselves, under the supervision of the trainer.

Explaining and demonstrating a technique helps participants in workshops comprehend it and how it fits into the farming cycle. Then, when they practice what has been explained and demonstrated, they acquire the skills to make use of the technique in their own gardens.

Organising training sessions

A well planned training session is more likely to be successful, but no matter how well a training session is planned there are times when you will have to change from your plan to compensate for something unexpected. Your planning should allow for this flexibility.

Here are some things to think about in planning your training session...

List the key areas

Make a list of the key areas you want to cover.

How are they relevant to the people who will attend the training session?

Choose your outcomes

Work out the outcomes you want from the session. What will students be able to do at the end of the session?

Knowing the outcomes you want brings focus to your training and helps you decide what to include and what to leave out.

Keeping to the teaching principle of providing information in small, easy-to-comprehend blocks helps achieve our learning outcomes.

Achieving your outcomes

How will you achieve your learning outcomes?

Through:

- presentation of information
- games
- small group activity
- garden visits
- practicals
- some other technique.

How will you present the information and build on each step? You can use demonstration, practice and analysis of what has been taught.

Time your activities

When you have chosen the activities that will make up your training session, give them an estimated timing.

Try to keep as close as possible to this timing so your training session does not run overtime.

If you run overtime you might have to leave something else out later.

Summary and closing

At the end of each part of your training session, summarise the main points of what you have taught to help participants remember them.

When the session finishes for the day, summarise the main points of what you have covered over the whole day.

Use questioning to help the participants feed back what they remember — ask them what they remember about what was covered.

This is an important part of the day's training, so allow enough time to do it. Then, if training is to continue the next day, briefly preview that day's material.

After the first day, it is a good idea to do some revision exercises each morning. This refreshes people's memory of what was covered the day before.

Watch participant energy and motivation

To keep students interested and to maintain their energy, plan to use a variety of teaching methods such as:

- **presentations** with flip charts on brown (or white) paper (using diagrams and pictures as well as written words where literacy skills are low)
- **participatory activities** such as making maps and tables of information on the ground
- **questioning** to engage the participants in thinking and sharing their ideas and knowledge
- **role play** to illustrate an important point
- **site visits** to see and explain something and to learn about other people's experience
- **small group activities** in which the participants are divided into groups to work on something, then share their findings when the group comes back together

- **practicals**: always apply all of the methods you have talked about or explored; if people then go and practice the methods they are more likely to use them in their own gardens.

Throughout the session, monitor participant energy levels and, if they are becoming tired, change to a more participatory and active mode of teaching.

Plan breaks to divide up the day.

Whenever the group appears tired you can choose an 'energiser' activity that involves movement.

Prepare materials

Obtain and prepare any materials **before the training session**.

Flip charts should be drawn up after the lesson has been planned but before it starts and other materials gathered. Take extra flip chart paper and marker pens for participants to use.

When a person is facilitating a session, the other trainers should assist in preparing materials for the following session.

Meet to assess activities

The facilitation team should **meet in the evening after the day's activities** or in the morning before activities start to monitor how the training is going.

This is the time to allocate responsibilities for the next sessions and to ensure that materials are ready.

Sample training timetable

Following is a sample training timetable for a day.

The timetable you draw up will take into account:

- the time available to participants
- their other daily responsibilities such as family meal preparation, social activities and work commitments.

8.00am:	group introductions—who people are and what they hope to get from the day + introduction of the learning objectives
8.30am:	group activity, information collection, needs identification, problem identification etc + report back to main group
9.00am:	demonstration of some part of the training
10.30am:	break
11.00am:	presentation
12–1.30pm:	lunch break
1.30–2.30pm:	field visit or practical
3–3.30pm:	discussion about what was seen during field visit or learned during the practical
3.30pm:	summary of key points covered during the day
4pm:	conclusion; ask each person to tell the group one thing they have learned during the day.

The trainer

Trainers are very special people because they:

- are motivated to help others achieve their basic needs
- have enthusiasm for their work
- are patient
- continually seek out new information to pass onto participants in their programs—they are continually learning
- have an extensive knowledge of what they teach
- are good communicators, passing on knowledge in easy-to-manage pieces and in language that participants can understand easily
- are problem solvers
- practice what they teach and experiment with new ideas in their own gardens
- learn from the participants in their workshops
- seek feedback about their teaching from staff members, program participants and colleagues
- understand the limitations and opportunities of village life
- are good organisers of people, events and resources
- have a warm and friendly personality to create a relaxed learning environment
- network with their colleagues and contacts
- have skills in working with and organising people and have good group dynamics skills
- have skills in conflict resolution.

Checklist for trainers

Organising the training

- what negotiations/ arrangements are necessary with village decision makers to organise the training?
- will a translator be needed to translate into local language?
- has an appropriate time been chosen for the training— is the time free of work or cultural obligations?
- has an appropriately sized training venue been organised and has workshop space been selected?
- is it necessary to plan follow-up workshops?
- has a place been chosen to make a sup-sup garden?
- who will look after the garden following the workshop?

Planning the training

- how many participants are expected and who are they?
- what seating arrangements would be suitable?
- has time been allocated for the different sessions and workshops?
- have resources been gathered for each session or workshop? (flip charts/ blackboard/ colour marker pens/ string/ materials for PRA and practical sessions)
- what do you know about the food/ nutrition/ health and other circumstances of the community?
- what process will be used—small group activities/ lecturing/ case studies/ brainstorming/ role play/ garden visits/ practical workshop in the garden?
- what are the key issues to address?
- how will the material be brought together in a summary?
- who will make a written record of the workshop if needed?
- who will produce a written report?
- what are the key questions to ask to find out if the participants have understood the material?
- how will you obtain participant feedback?
- how will you identify your own learnings from the training?
- how will you make sure that women are free to express themselves and fully participate?
- who are the local experts or innovative farmers who will be resource people during the workshop and whose gardens can be used for visits?

Logistics

- what garden sites are available for field visits and workshops?
- what are the food arrangements for participants?
- are you using local food for catering?
- what are the arrangements for field worker accommodation and food if staying in the village?
- what transport arrangements are necessary?