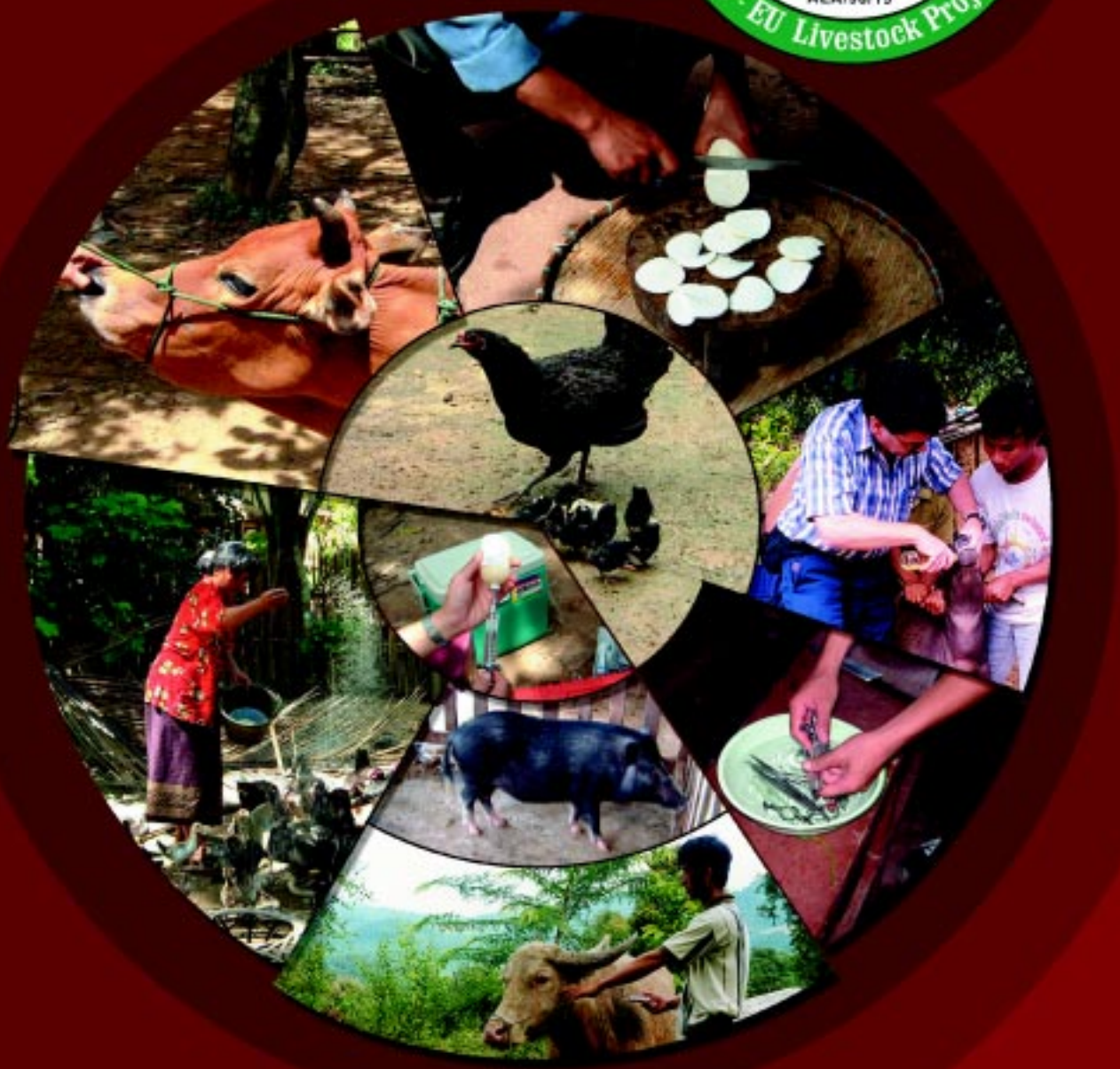
# VVW Manual



## A manual for the Lao Village Veterinary Worker (VVW)

A project supported by the European Union

# VVW Manual

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# Preface

This manual has been produced as an output of the European Union - Lao PDR Project ALA/96/19, "Strengthening of Livestock Services and Extension Activities", within the Department of Livestock and Fisheries of the Ministry of Agriculture and Forestry of Lao PDR.

The original edition in Lao language (ISBN 974-90489-1-1) was intended for trainees attending the different modules of the improved training program for Village Veterinary Workers. The present English version was produced following requests from different organisations and agencies working within Lao PDR as well as in other countries.

Text in this manual has been kept to a minimum and the many drawings by Mongkham Boualavanh visualize the subject matter. The manual is also intended to be a workbook. The VVW-trainees are required to stick into the manual the labels of available medicines and vaccines. Calculations regarding dosage of medicines per animal, cost and profit, direction of use, etc. are based on these labels and are part of the training course.

In preparing this manual, training approaches used in similar programs in the region have been incorporated and teaching materials produced by various programs have been used. For general scientific background information, standard veterinary handbooks have been used. The comments and contributions by Mirjam de Koning, B.C. Keng and Peggy Macqueen are gratefully acknowledged.

Oosterwijk Gerard, Van Aken Dirk and Vongthilath Sounthone (*Editors*)
Project Management Unit, Vientiane, January 2003.

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# ພາກແນະນຳ: ສັດຕະວະແພດບ້ານ

## Introduction: The Village Veterinary Worker (VVW)

ຫຼັກສູດທີ 1 : ການລ້ຽງສັດທົ່ວໄປ

**Module 1 : Livestock Production**

ຫຼັກສູດທີ 2 : ການດູແລຮັກສາສຸກຂະພາບສັດ

**Module 2 : Animal Health Care**

ຫຼັກສູດທີ 3 : ພະຍາດຂອງສັດລ້ຽງ

**Module 3 : Animal Diseases**

ເອກະສານຊ້ອນທ້າຍ : ຊຸດເຄື່ອງມືພື້ນຖານ ສຳລັບ ສັດຕະວະແພດບ້ານ ແລະ ຢາປິ່ນປົວສັດ

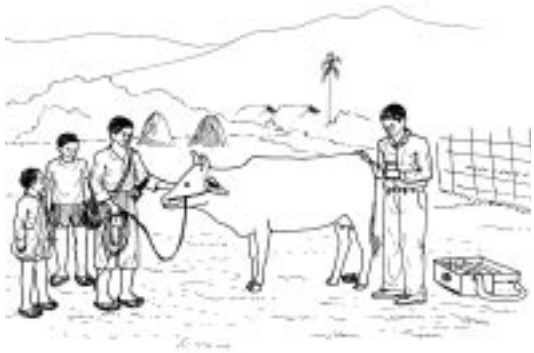
**Annexes : Equipment and Medicines**

# The Tasks of the Village Veterinary Worker (VVW)

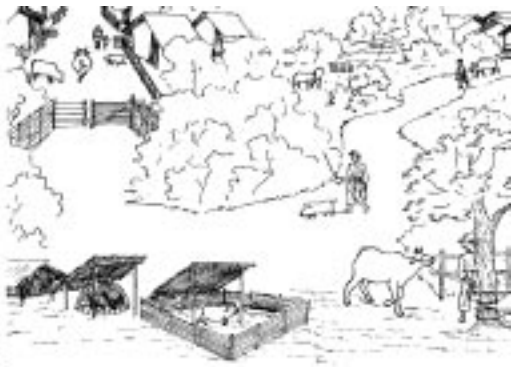
**1. Coordinate with the village authorities and farmers to organise vaccination campaigns in time to prevent disease outbreaks. Vaccination should NOT be performed on sick animals.**

**2. Examine sick animals at the request of farmers, and choose the right treatments to help the animals get better. The VVW should follow-up these animals to see the results of the treatment.**

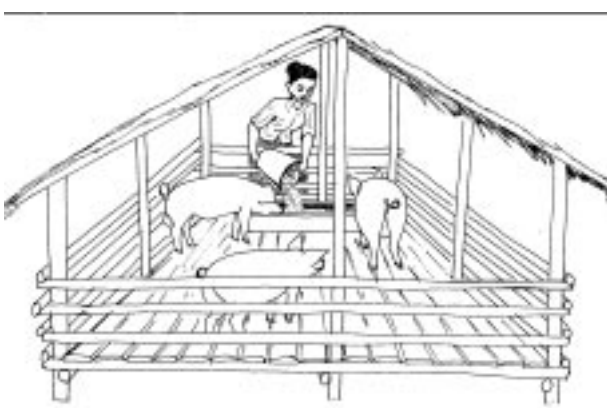
**3. Record livestock data in the village: birth, mortality, diseases and sales. By recording data the VVW can assist villagers and livestock staff to solve problems and increase production.**

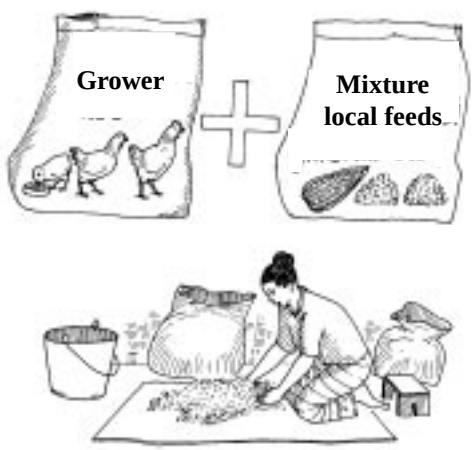


**4. Report disease outbreaks to the district livestock office. If necessary, the VVW should assist the livestock staff in sending samples to the veterinary laboratory for examination.**



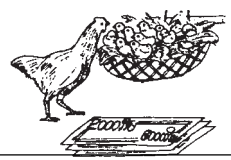
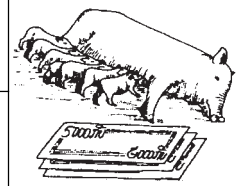
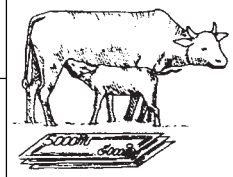
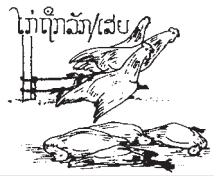
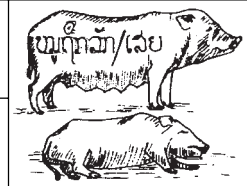
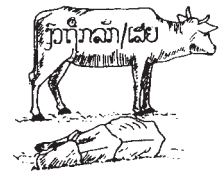
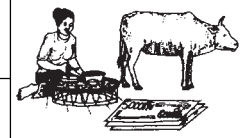
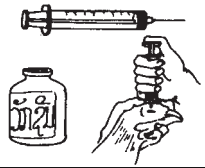
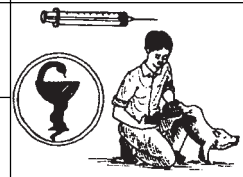
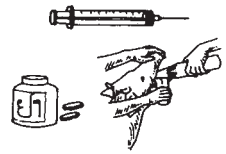
**5. Make sure that foreign or new animals do not enter the village. These animals need to be kept in quarantine (isolation) for 2 weeks before being released into the village area.**






**6. Raise his/her own animals using good husbandry techniques. He/she should be able to demonstrate to other farmers how to improve livestock production in the village.**

**Name of farmer :** **Name of VVW :** **Name of village:** **Recording period : from** **till**

| **Farm Record** | **Local chicken - Yellow chicken** | | **Local pig -Improved pig breed** | | **Cattle and Buffalo** | | |
|---|---|---|---|---|---|---|---|
| Newly born or hatched |  | |  | |  | | **Specify the animal numbers, breed and age group** |
| Newly bought | | | | | | | |
| Stolen, lost, died (accident) |  | |  | |  | | |
| Died (disease, malnutrition) | | | | | | | |
| Consumption |  | |  | |  | | |
| Sold | | | | | | | |
| Vaccination (HS, CSF, NcD, FC, etc.) |  | |  | |  | | |
| Other drugs, like dewormers (Pyrantel) | | | | | | | |
| Disease problems (symptoms, affected animals, treatment, etc) |  | |  | |  | | |

Remarks:

# How do you become and work as a VVW?

**Selection of the VVW in the village.**

**Training course in the district: 3 modules of 4 days each.**

**The village.**

**District staff visit VVWs regularly in their villages to provide assistance.**

**The VVW collects new medicines from the district office or pharmacy regularly.**

# Government Regulations in which VVW may be involved

**Section 4 of Regulation on Livestock Management in Lao PDR (no.0004/MAF 02.01.1997)**

**Section 4: Animal epidemic disease prevention and vaccination**

**Article 19:** Determination of vaccine types to be used
All livestock owners need to vaccinate all animals with vaccines as determined by DLF.

**Article 20:** Responsibilities of the animal owners
Livestock owners shall pay vaccination fees as prescribed by DLF, PAFO and DAFO.

**Article 21:** Ban on the livestock movement in some cases
Movement of cattle, buffaloes and pigs is not permitted without health and vaccination certificates from the veterinary officer. Non-vaccinated animals (or when immunity has expired) need to be vaccinated at least 15 days before movement.

**Article 22:** Duties of the animal buyer, seller and veterinary officer
- Animal owner should discharge his responsibility as specified in article 20.
- Before buying animals, the buyer should check the validity of vaccination certificates.
- The veterinary officer is responsible for vaccinating animals and issuing an official vaccination certificate to the animal owners.

**The control of the spread of epidemic diseases**

**Article 23:** Notification of disease outbreak
- Animal owners shall notify the VVW or chief of the village, who will further report to the district veterinarian or the district Governor within a period not exceeding 48 hours.
- The district veterinarian should urgently inform PAFO to report to the Provincial Governor and DLF. PAFO shall immediately co-ordinate with district veterinarians and VVWs to control the spread of disease.

**Article 24:** Declaration of epidemic zone
The Provincial Governor shall declare epidemic zones in areas where the outbreak is occurring, referring to requests by DLF and PAFO. The following restrictions shall be applied:

1. It is strictly forbidden to process any animal carcasses for consumption or for sale.
2. It is forbidden to slaughter animals affected by the disease outbreak, whether healthy or sick.
3. Animal owners shall bury or burn carcasses. When the animal owner is not known, the owner of the land on which the carcass was found, shall arrange for the disposal. The landowner is entitled to claim labor expenses from the animal owner. In the case of an animal dying in a public place or in a remote area, the chief of the village shall mobilize the villagers to burn or bury the carcass. It is strictly forbidden to dispose of the carcass in rivers, lakes or streams.
4. The district Governor has the right to order policemen and security forces to control smuggling of animals and their products in and out, or passing through the affected area.
5. District veterinary officers and VVWs shall control the disease outbreak within their areas.
6. The epidemic zones shall be cancelled after 30 days of the declaration. If, at the expiration of 30 days, animals are still falling sick and dying, the period shall be extended by the Provincial Governor by 15 days.

**Article 25:** Responsibilities of the animal owners to report sick and dead animals
Animal owners who fail to report the suspicious death or sickness of cattle, buffaloes and pigs, will be liable to pay for any costs resulting from the spread of the disease to other livestock.

# NOTES

## ອາຫານ

**Feeding**

## ໂຮງເຮືອນ ແລະ ການອະນາໄມ

**Housing and cleaning**

## ການຄັດເລືອກພັນ ແລະ ການຕອນ

**Selection and castration**

## ພັນພື້ນເມືອງ ແລະ ພັນປັບປຸງ

**Local and improved breeds**

# 1. 1. The importance of livestock raising

**Cattle and buffalo are reared for use as draught animals and as a source of meat. They function also like "a bank"; an animal is sold when the farmer needs money.**

**Small animals (pigs, poultry, ducks and goats) are easy to raise and can provide the family with high quality meat (and eggs) rich with animal proteins. People need animal proteins for good health and strength.**

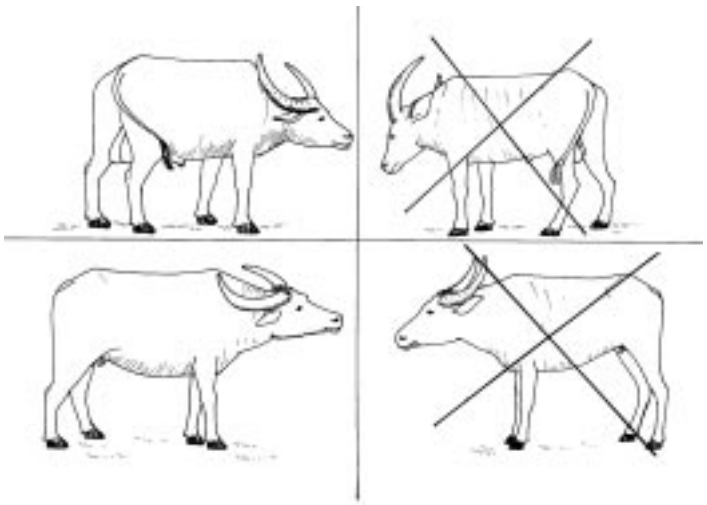
**In addition, the farmer may have a surplus of eggs, chickens and pigs that can be sold on the market. This will provide the family with regular cash income for their needs.**

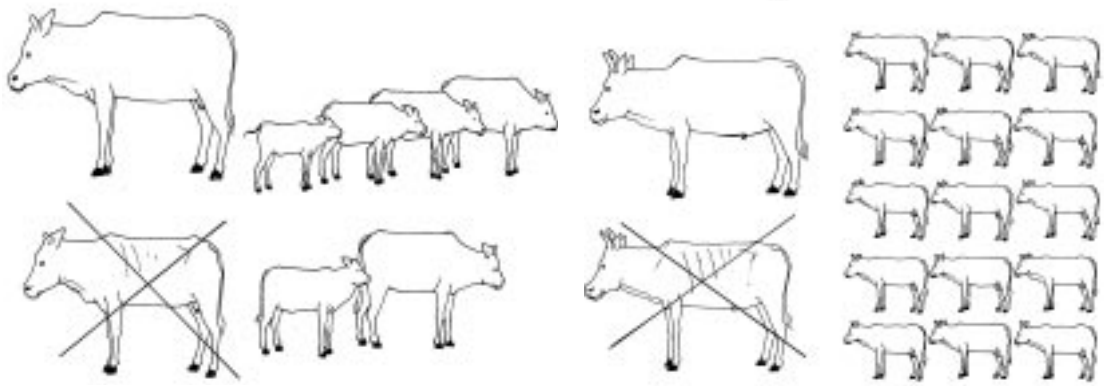
# 1.2. Cattle and buffalo

## 1.2.1. Selection and reproduction

**Animals selected for breeding should:**

- **be healthy and strong,**
- **have a large brisket,**
- **have strong bones,**
- **have a shiny skin,**
- **show good mating behaviour.**





**A good breeding cow gives a calf every 1 to 1.5 year. Cows that are weak and do not produce a calf regularly should be culled.**

**A good breeding bull can serve 10 to 15 females.**

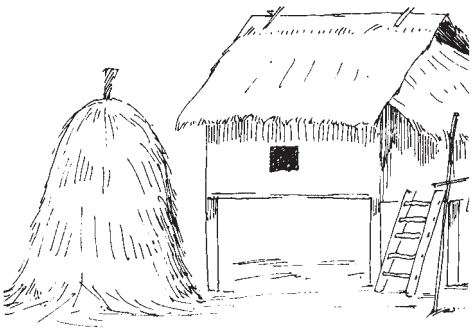
**Burdizzo**

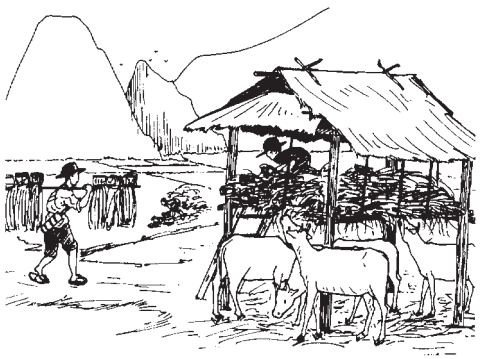
**Males that are not selected for breeding should be castrated. Calves can be castrated with the Burdizzo.**

**Breeding bulls should be changed at least every 3 years to avoid inbreeding.**

# 1.2.2. Nutrition

**Water and feed should always be available. Additional supply of water and feed is necessary in dry and hot seasons when animals can not graze green pasture. Never run out of rice-straw.**





**Supplementary feeds are needed especially for breeding cows and young calves. Common feeds are rice-straw, grasses and hay from bulking plots, fodder trees and maize (green or dried).**

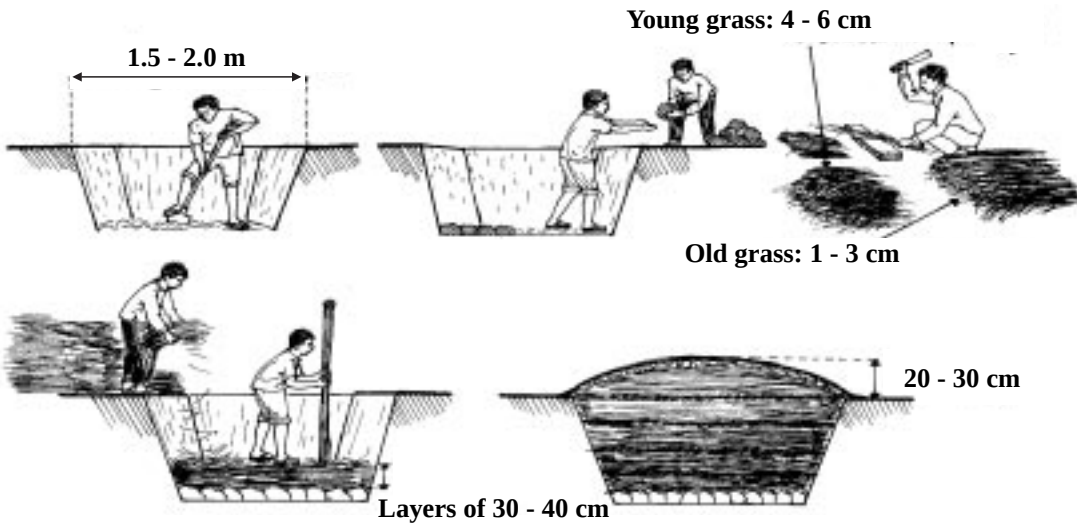
**Maize is an excellent feed for all livestock: the whole plant chopped or as crushed grains. Fodder trees (rich in protein) can be planted as a "living-fence" or following contour lines.**

**High yielding grasses can be planted in bulking plots or in rows. Usually these grasses do not withstand grazing and are instead used as cut and carry, for making hay or as standing hay.**

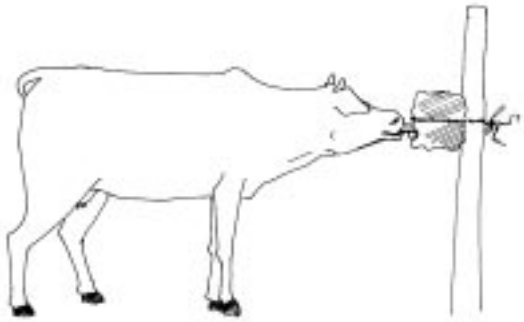
**Making hay (drying grass in the sun and protecting it from rain) will keep the nutrients of grasses for a long time.**

**The farmer may use the following feeding techniques when keeping his herd on a (semi) commercial basis:**

1. **making silage from wilted grass,**
2. **adding molasses and urea (a fertilizer) to rice straw.**



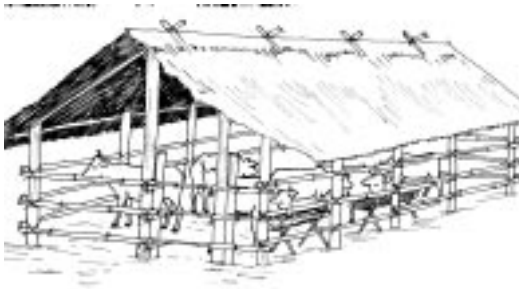

**Silage made from wilted grass is a good dry-season feed for (semi) commercial herds.**



**Minerals, especially salt, should be fed routinely to all animals to keep them healthy. Also charred, crushed bones can be fed to cattle and buffalo.**

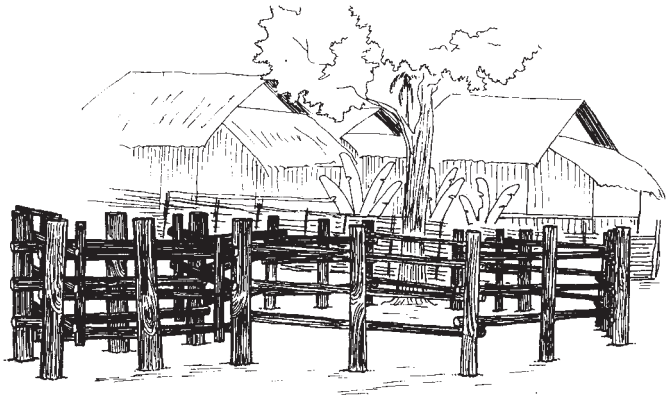
**In the first hours following birth newly born calves must drink colostrum. The nursing cow needs plenty of water and good feed to produce enough milk for the calf.**

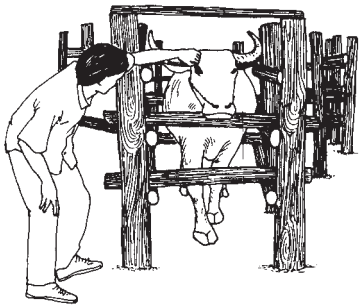
# 1.2.3. Housing

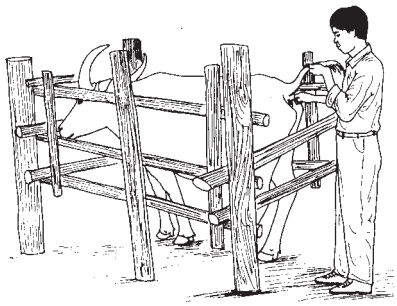


**Proper housing allows the farmer to take good care of animals when they are sick or giving birth, and to supply supplementary feeds. It protects against sun, wind, rain and against predators and thieves. It also allows the collection of manure for crops. Water and grazing land should be available nearby.**

**A pen with a crush is very helpful during vaccination campaigns and for the examination and treatment of sick animals.**

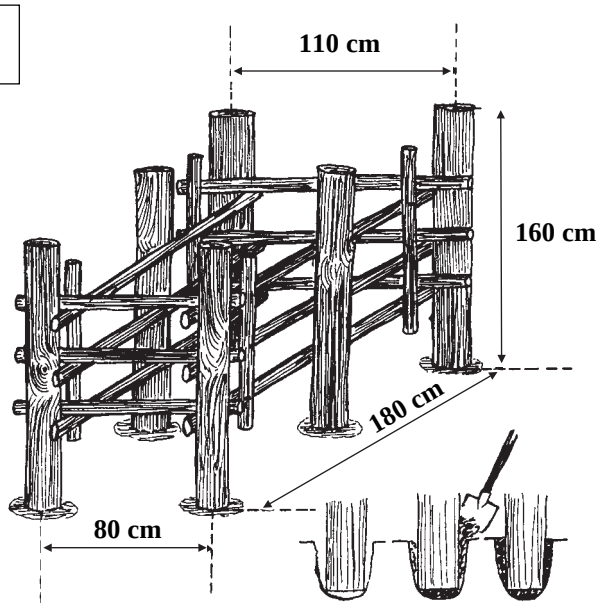




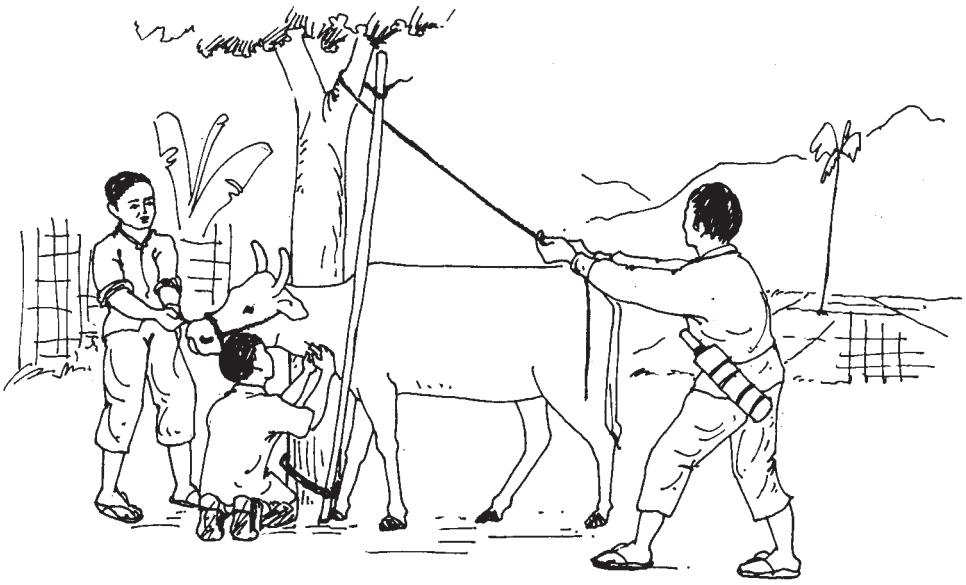


**The pen should be strong, shaded and not too big (large enough to hold 10 animals). The crush should be narrow, so the animal can not move too much during treatment.**

**Construction of a permanent crush to restrain cattle and buffalo.**




**Reinforced with cement**



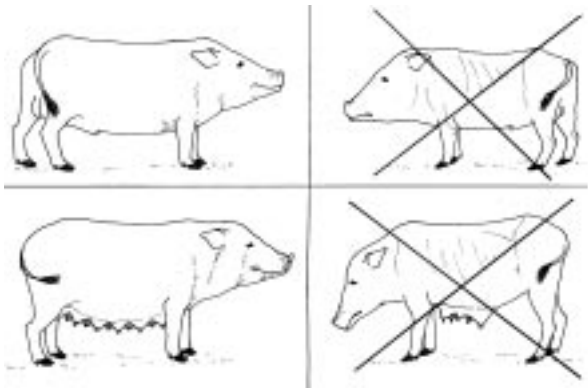
**A moveable "bleeding-pole" is used to restrain cattle and buffalo. This two meter long (metal) pole is chained at the base of a big tree. At the top, a rope is used to pull the pole towards the tree and hold the animal.**

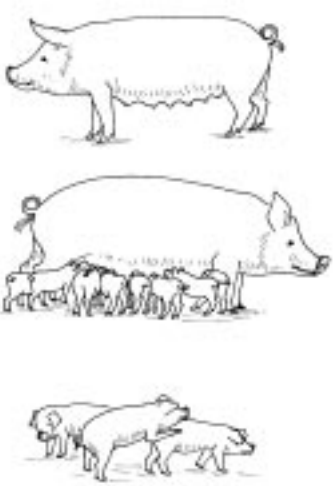
# 1.3. Pigs

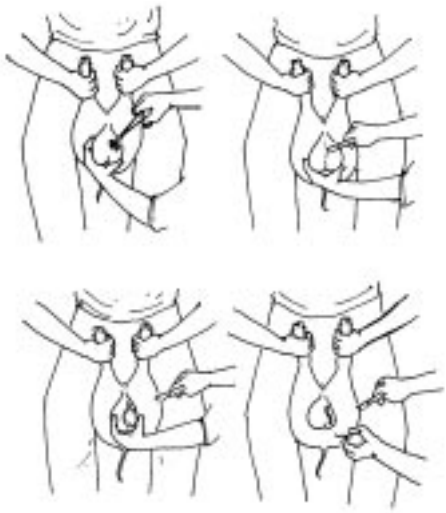
## 1.3.1. Selection and reproduction

**Pigs selectected for breeding should :**

- **have a healthy appearance and good feed conversion rate,**
- **have well shaped reproductive organs,**
- **produce fast growing offspring that are ready for slaughter at 5 months,**
- **be the very best pigs of all litters and that inbreeding is avoided.**



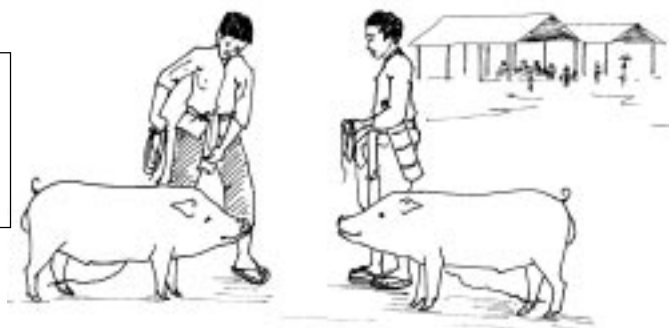




**Breeding sows should have 12 teats and deliver litters of 8 or more piglets twice a year. Breeding sows should be selected after 1 or 2 litters, to see if they are good mothers and have strong piglets.**

**Castrate all the weak, smaller piglets at 2 weeks old and keep the best of the litter for breeding.**

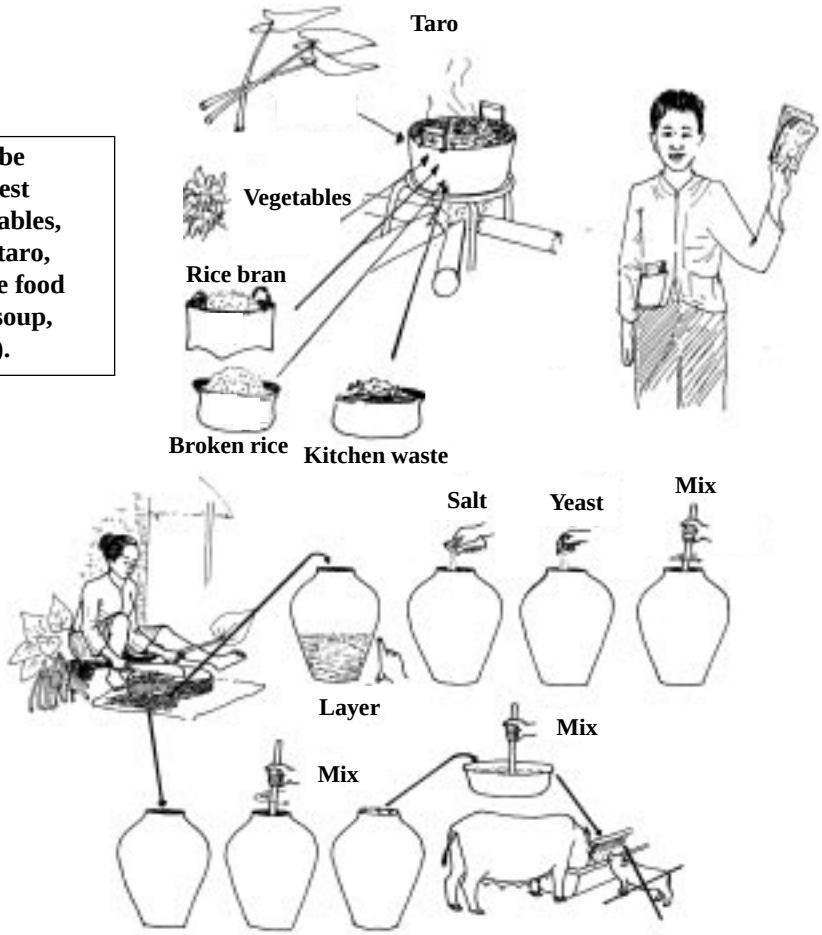
**Breeding stock should be exchanged (refreshed) occasionally to avoid breeding in the same family (e.g. by selecting strong males from other farms or other villages).**



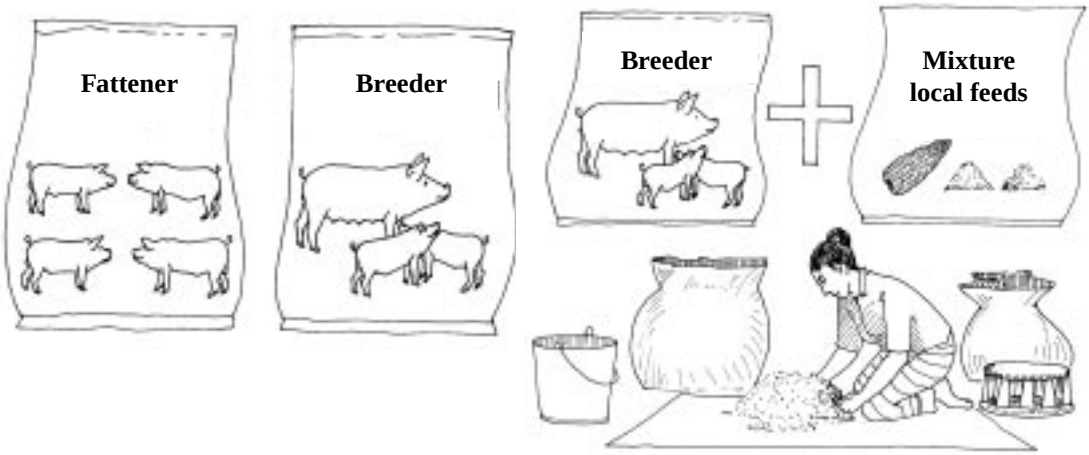
# 1.3.2. Nutrition


**Good pig feed contains energy, protein, minerals and vitamins. Rice bran, broken rice, maize, soya beans, cassava, vegetables and distillers' residues are often used in pig feed.**

**Pig feed can also be prepared with forest products (wild vegetables, wild bananas, wild taro, etc). At the same time food waste can be used (soup, rice, noodle, etc).**

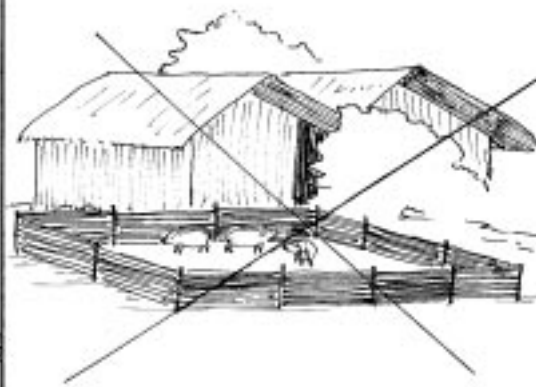



**Example of a locally prepared supplementary pig feed from a forest product (taro).**

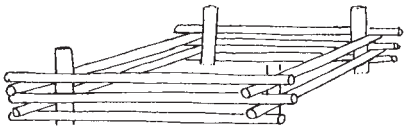



**Improved rural pig production, using cross-breeds of exotic breeds, could use commercial feeds mixed with locally available cheap feeds (like rice-bran, maize and beans). Lactating sows, piglets and weaners particularly need such rich home made pig feed.**

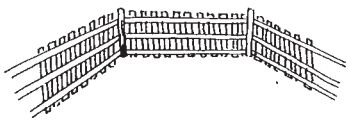
# 1.3.3. Housing



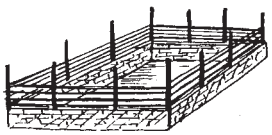
**The pig sty should be shaded by trees and the floor should always be dry and clean. During the day a little sunlight should be able to penetrate. The sty should be well aerated and the roof not too low. Below the sty, crops can be grown on the slope using the manure waste.**



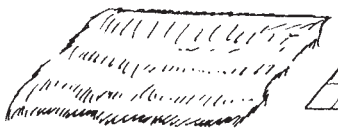
**Pen with round poles**



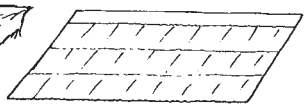
**Timber partition**



**Brick wall with supports for roof**



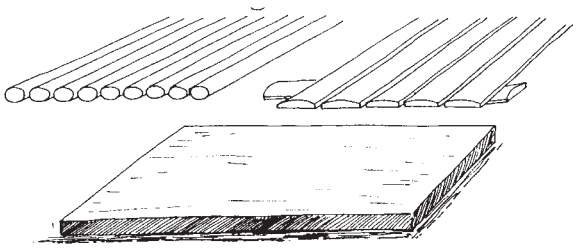
**Grass roof**



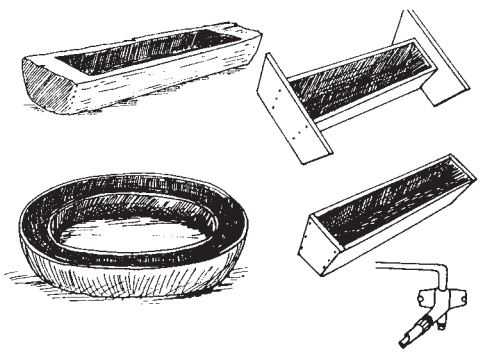
**Iron-sheet roof**

**Drinkers and feeders**

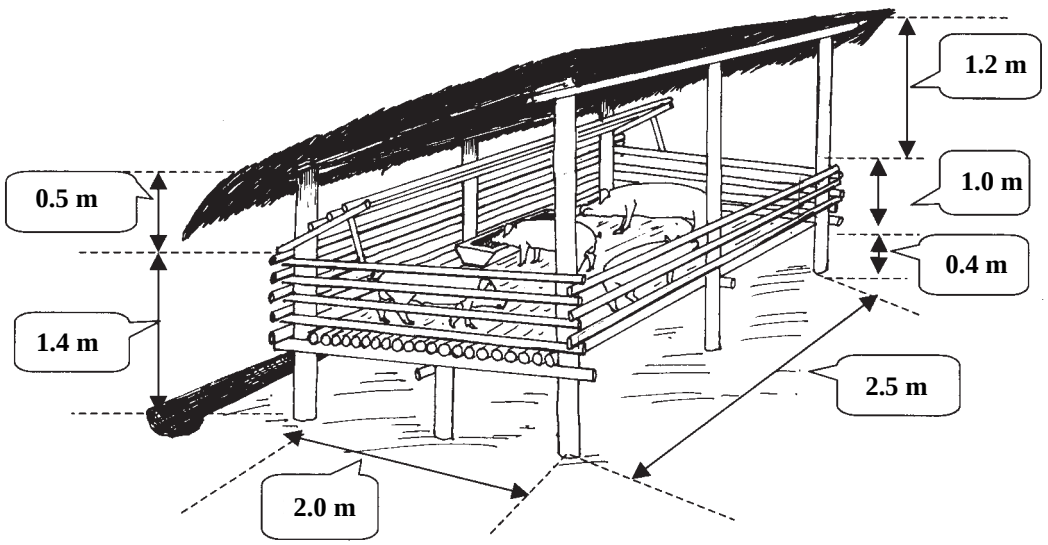
**Wooden floor**



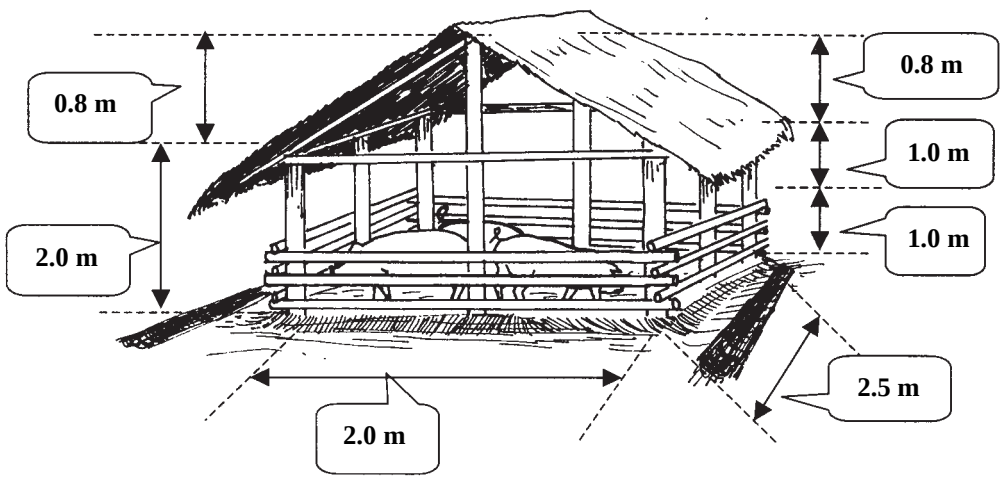
**Cement floor**



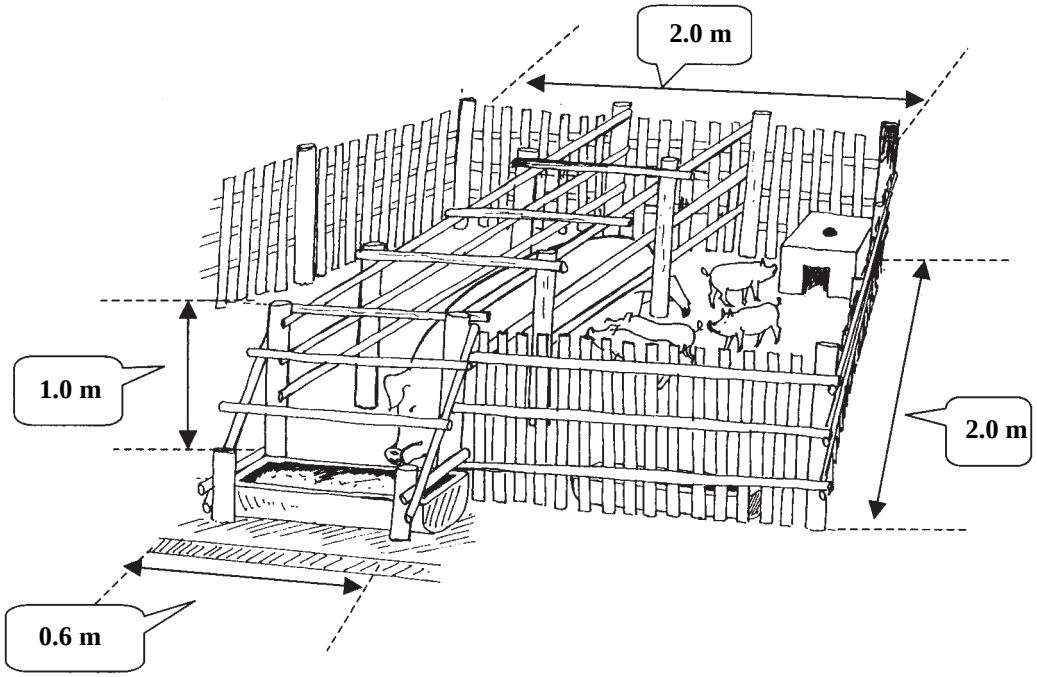
**These materials can be used for fences, walls, roofing, flooring and troughs.**



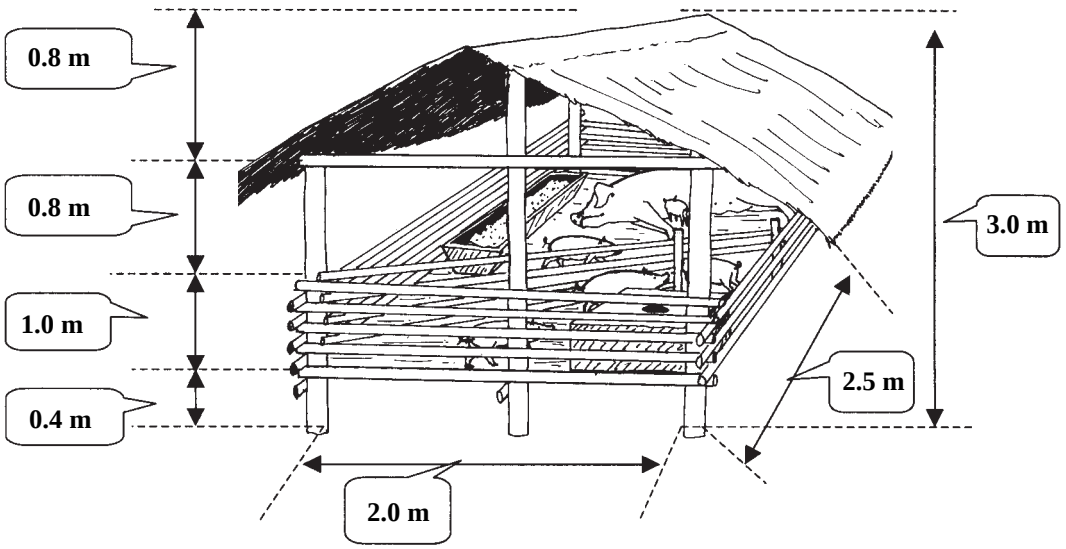

**Pig pen for fattening:**
- **raised (0.4 m), slatted, wooden floor, with a one-sided roof**
- **pen size should be 2 x 2.5 m for 4 fatteners (at 4 months of age)**




**Pig pen for fattening:**
- **cemented floor with a two-sided roof**
- **pen size should be 2 x 2.5 m for 4 fatteners (at 4 months of age)**




**Pen for sow and piglets:**
- **cemented floor with roof (not visible)**
- **pen size (2x2m), sow-crate (0.6x2m), piglet-box (0.6x0.6m)**



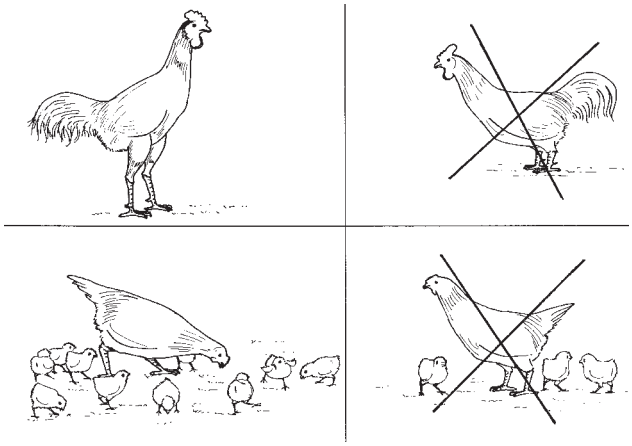

**Pen for sow and piglets**
- **raised (0.4m), slatted, wooden floor with a two-sided roof**
- **pen size (2x2.5m), partitioned corner, piglet-box (0.6x0.6m)**

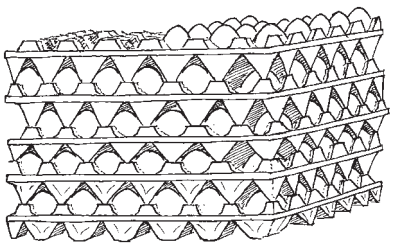
# 1.4. Poultry

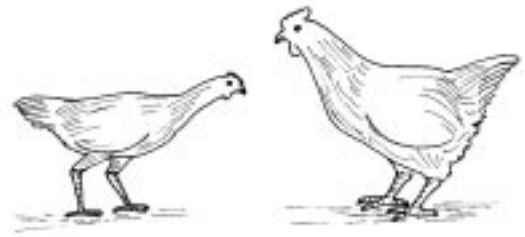
## 1.4.1. Selection and reproduction

**A good chicken for breeding has the following qualities:**

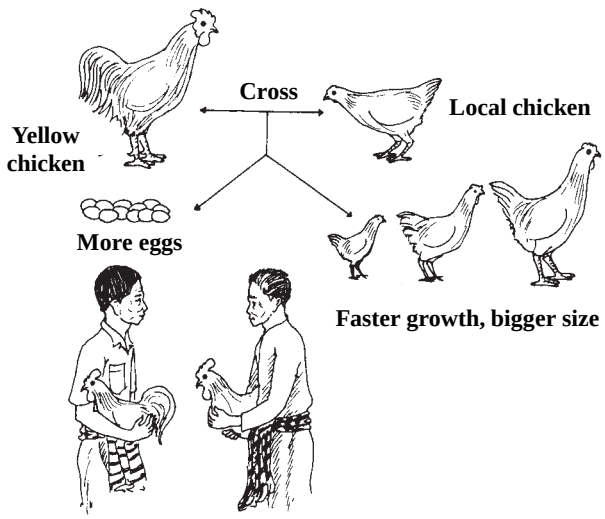
- **fast growing and big,**
- **active in mating,**
- **alert and lively,**
- **good scavenging behaviour,**
- **high egg production,**
- **resistant to disease.**

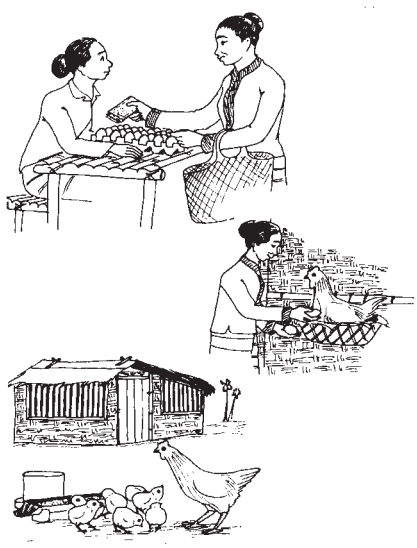






**With good management, improved rural poultry breeds like the "Yellow Chicken" can lay 130-140 eggs per year and grow up to 1.5 kg within 12 weeks.**

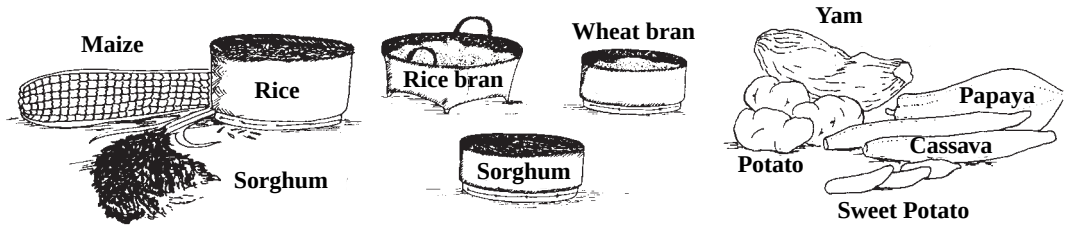


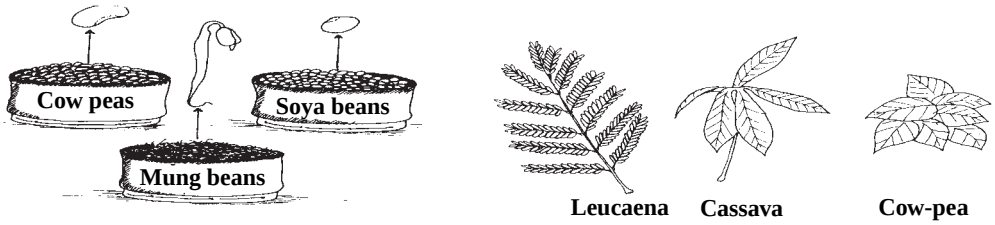
**Farmers can use the cocks of improved breeds for producing better offspring from their local hens (cross-breeding). Local hens can hatch the fertilized eggs of improved breeds.**

# 1.4.2. Nutrition

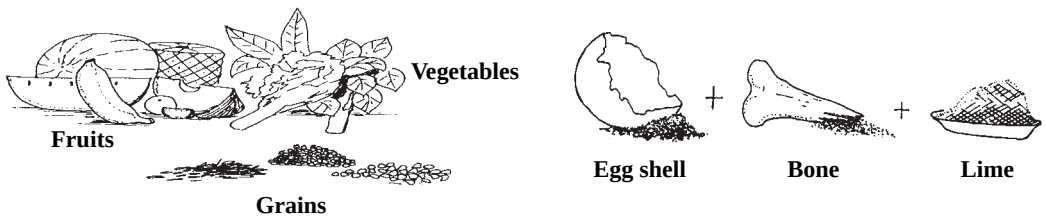
**Good chicken feed contains enough energy, protein, vitamins and minerals.**




**Energy can be found in grains (maize, sorghum, wheat, rice), crop by-products (maize bran, rice bran, millet bran), root crops (cassava, sweet potatoes, yams) and in kitchen left-overs.**

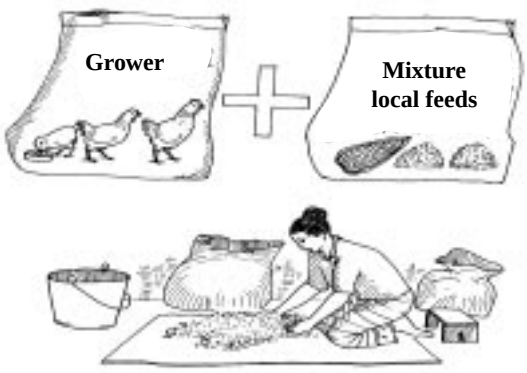



**Protein can be found in seeds (beans, cow-peas, grams, leucaena), leaves (cassava, cow-peas, leucaena), crop by-products and in products of animal origin (fish meal, termites, blood).**



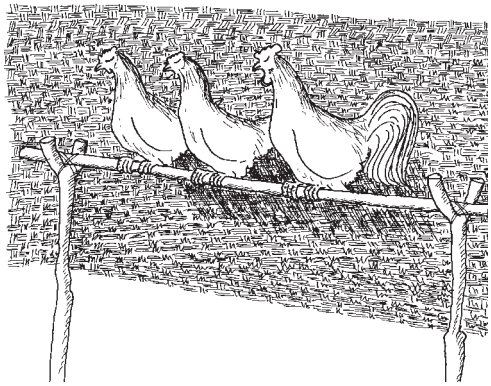

**Vitamins are in all types of fresh plants, fruits, seeds and other products. Minerals can be found in shells, bones and lime. Chickens need small quantities of vitamins and minerals.**

**Improved chicken breeds grow better and lay more eggs when locally available feeds are mixed with ready-made poultry feed.**

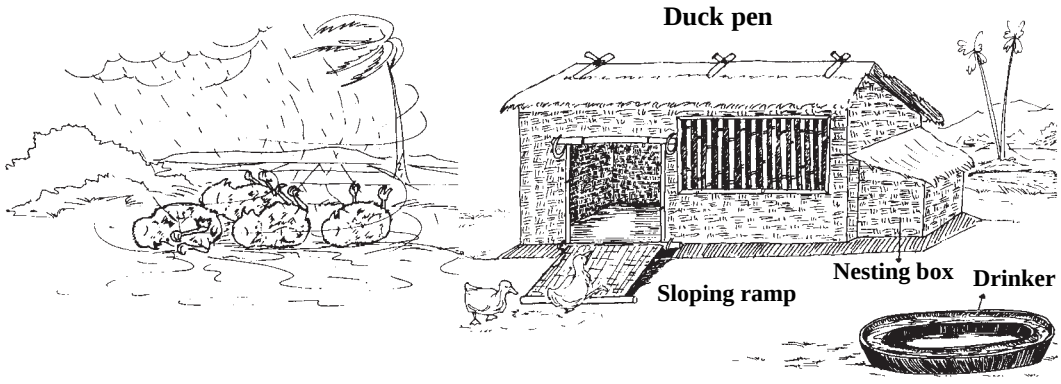


# 1.4.3. Housing

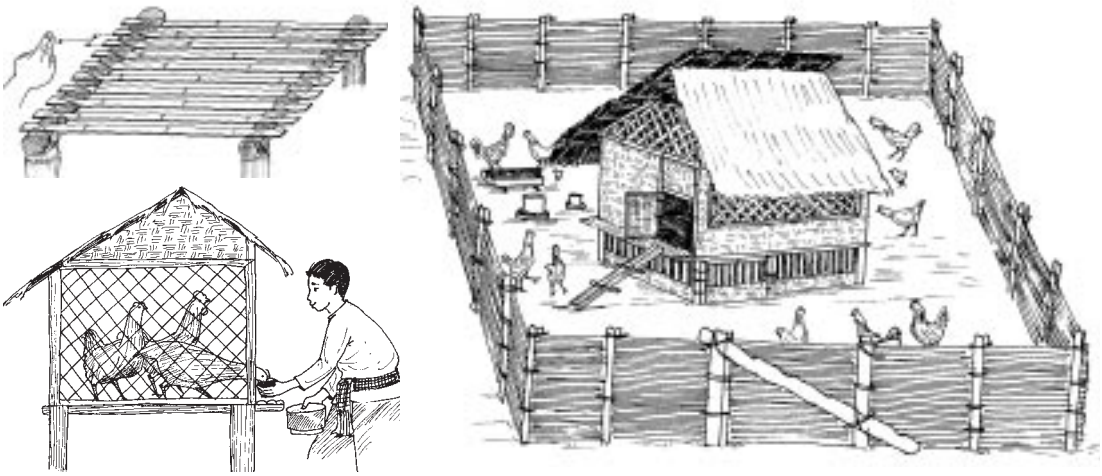
**Chickens need a house for protection against wind and rain, with good ventilation and sunlight. To reduce disease, let the chickens out regularly for fresh air and to scavenge for additional feed.**

**The space requirement for 4 chickens is at least 1 square meter. They need perches for roosting. Nests should be constructed in a dark corner and 60 cm above the ground.**

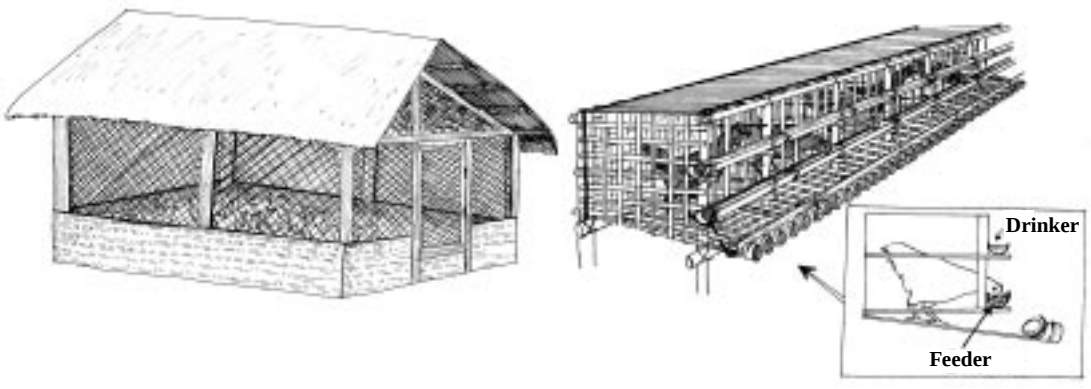



**Young chicks can not stand cold and wet conditons, as they will become sick and die quickly. Ducks do not require perches and the nesting boxes should be low (or use sloping ramps). They require large water containers to put their heads and necks in the water.**



**A chicken house with a slatted floor on stilts stays clean and reduces disease. The droppings can be used as fertilizer. In an enclosed area (run) the chicken can be let out to scavenge.**

**Chickens should not enter the area under the house as it can be a source of infection. The manure should be removed regularly and may be used to fertilize the garden or fields.**




**Alternative housing models for (semi) commercial poultry production.**

# NOTES

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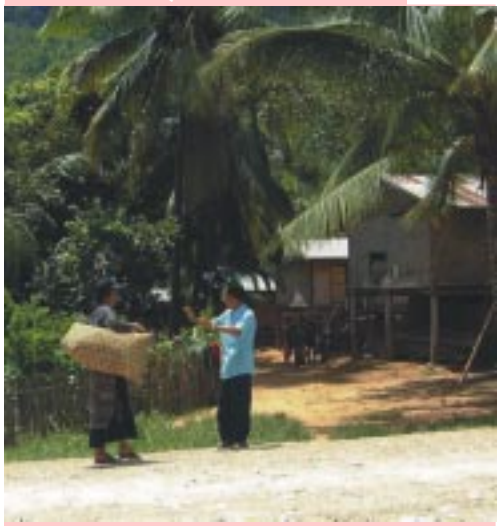


Quarantine

ການກວດກາສຸກຂະພາບສັດ (ຕາ)

Examination of the eye

ການນຳໃຊ້ວັກຊີນຢອດຕາ

Vaccination by eye drop

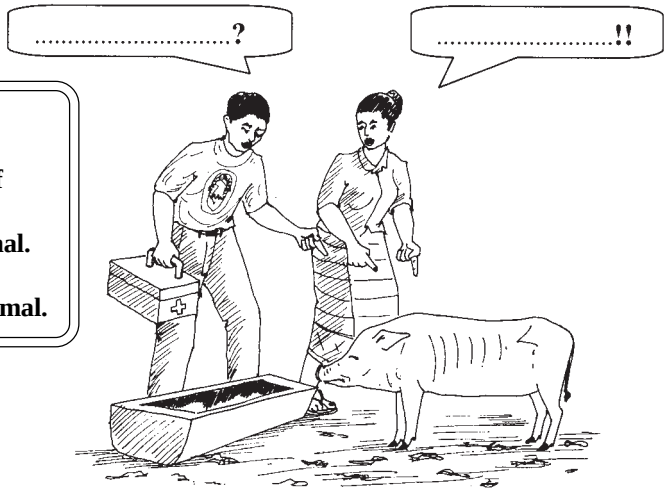
ວິທີການສັກຢາເຂົ້າກ້າມຊີ້ນ

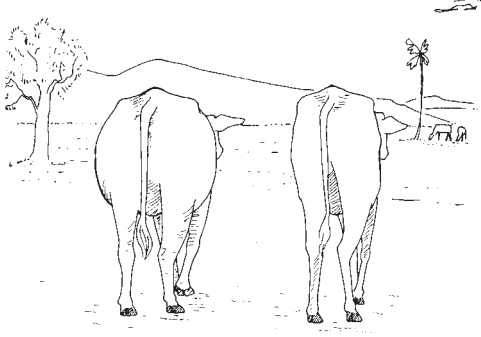
Injection in pig

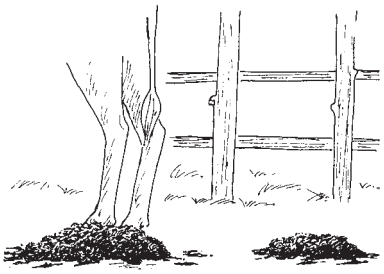
# 2.1. Examining the health of an animal

**The VVW should ask the farmer questions about:**

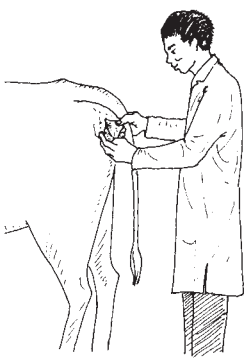
1. **The sick animal and any signs of disease.**
2. **What was done to treat the animal.**
3. **Other animals the farmer owns.**
4. **Housing and nutrition of the animal.**

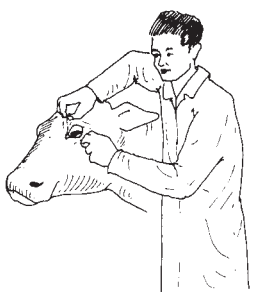


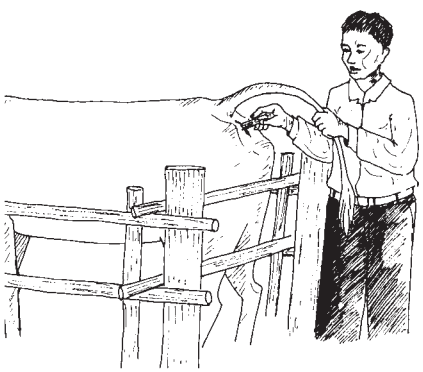





**Observe the animal from a distance: behaviour (with herd or alone), body condition (good or poor), rumen fill (full or empty), manure (normal or has diarrhoea), coat (shiny or dull). Look for any other abnormalities.**







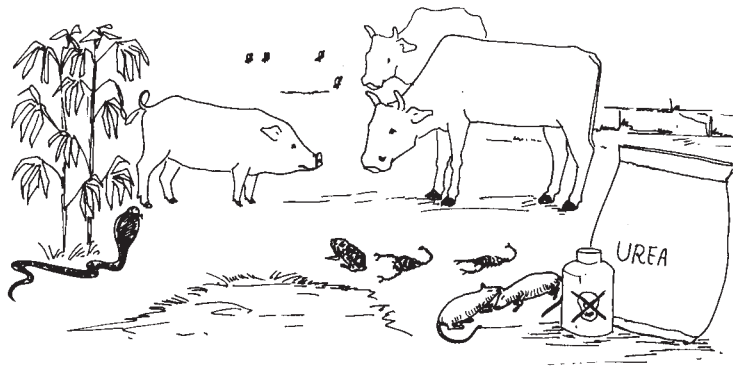
**A closer look at the animal: abnormalities (e.g. feet, udder), membranes (vulva and eye), respiratory system (breathing easily or heavily), heart beat, temperature (normal or high).**

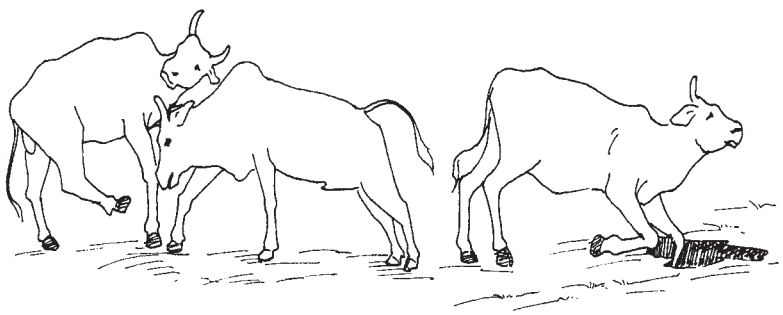
# 2.2. Diseases in general

## 2.2.1. Non-infectious diseases

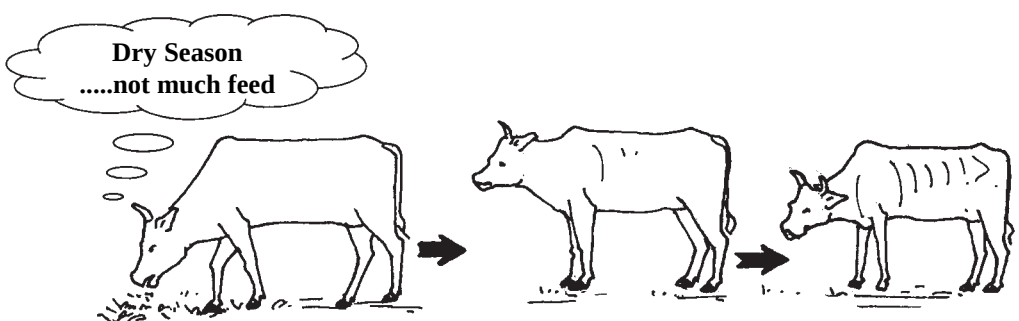
**Non-infectious diseases have many different causes. But they are never caused by microbes or parasites. They never spread from one animal to another.**

**Poisons: e.g. snake bite, rat poison, eating leaves of some plants, drinking pesticides, etc.**



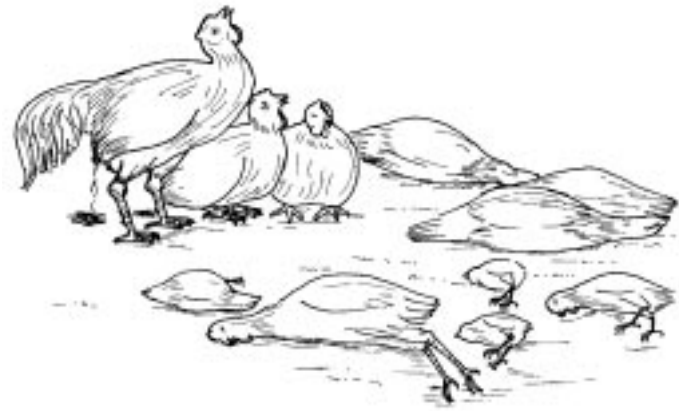
**Wounds and fractures: e.g. accidents, cuts, fractures, damage to internal organs, etc.**




**A thin cow**

**When animals have a shortage of water and/or feed they become weak, lose weight and do not grow well. Young animals and lactating females in particular need good feed and water.**

# 2.2.2. Important infectious livestock diseases in Lao PDR



**Poultry diseases, like Newcastle Disease and Fowl Cholera can kill entire village flocks that have not been vaccinated regularly.**

**Classical Swine Fever (Hog Cholera) is an important disease of pigs that causes many deaths and spreads to other pigs in the village.**

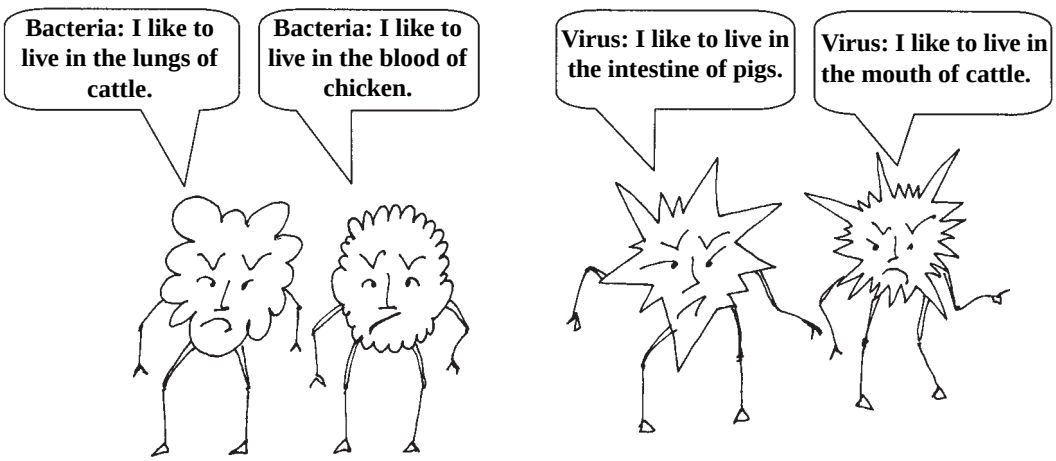
**Haemorrhagic septicaemia can cause deaths in cattle and buffalo. The economic losses from this disease are high because of the high value of buffalo and cattle.**

**Swelling**

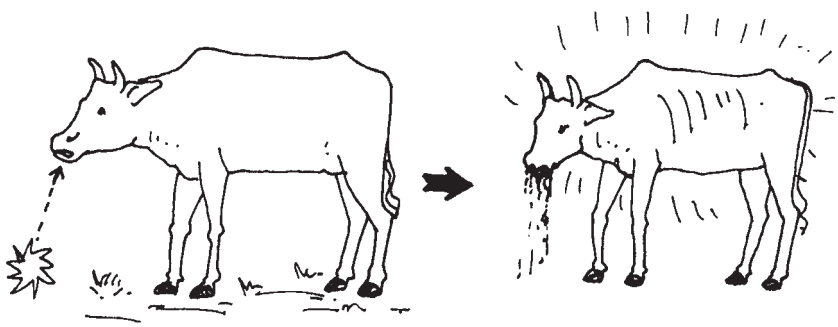
# 2.2.3. Diseases caused by microbes (bacteria and viruses)

**Microbes are very small organisms, that can live anywhere in the soil, plants, humans and animals. Many types of microbes cause diseases that lead to weakness, low production and death in animals. There are 2 types of microbes:**

- **bacteria: can only be seen under a microscope and can be killed by antibiotics.**
- **viruses: cannot be seen under a microscope and cannot be killed by antibiotics.**




**Microbes travel around the body to live in their favorite organs. This is called "infection".**

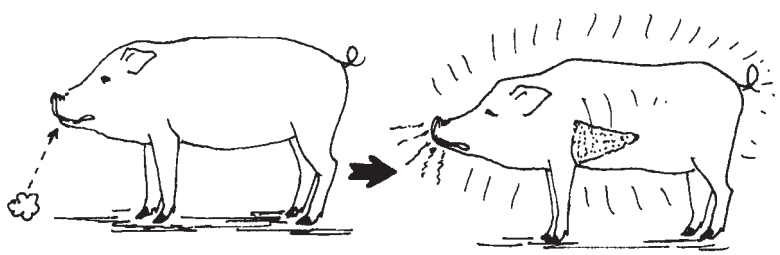


**Microbe enters cow and goes to the mouth**

**Cow develops a high temperature**

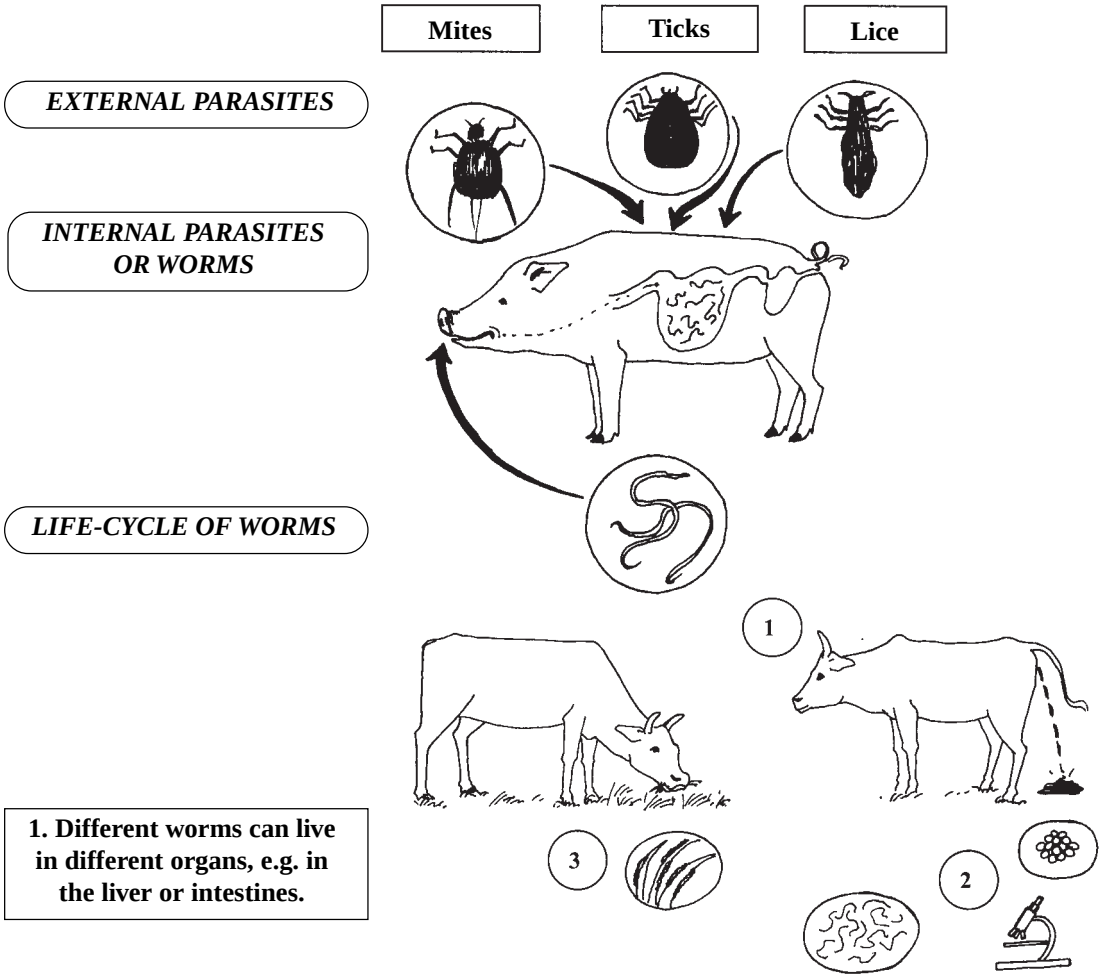
**Microbe enters pig and goes to the lung**

**Pig develops high temperature and cough**



# 2.2.4. Diseases caused by parasites

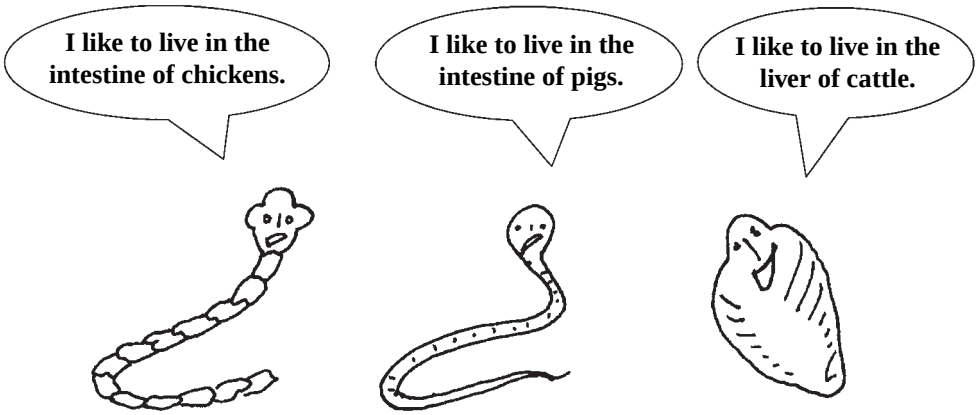
**A parasite is a small creature living on or in an animal (or human) and getting its food from it. Parasites can cause disease, weakness, low production and sometimes death. Parasites are divided into 2 groups: external parasites (ticks, lice, mites) and internal parasites or worms. Parasites can be killed by medicines (parasiticides or anthelmintics).**




**1. Different worms can live in different organs, e.g. in the liver or intestines.**

**2. Eggs, larvae and worms can be seen under a microscope.**

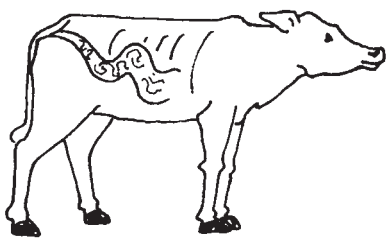
**3. Worms in cattle: the eggs in the dung develop from larvae into small worms on the grass that cattle eat.**

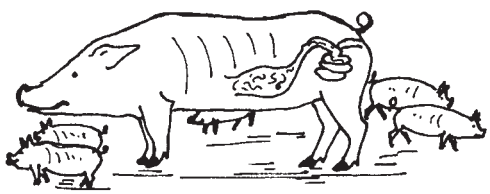



**Worms can have different shapes. Some are easy to see and some are not.**

**Diseases caused by parasites can be treated as follows:**

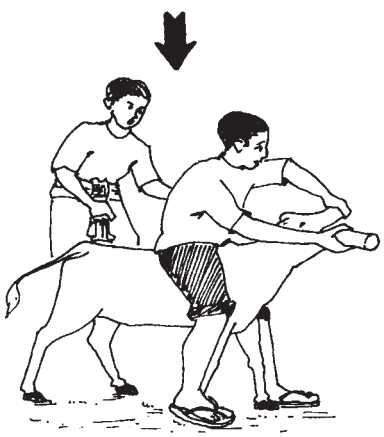
1. **External parasites can be killed by chemicals applied to the skin of the animal.**
2. **Internal parasites can be killed by giving medicines (anthelmintic) by mouth or injection.**
3. **Some medicines (e.g. injection with Ivermectin) kill both external and internal parasites.**

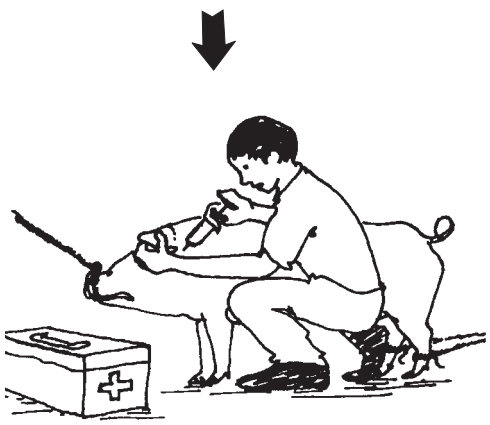




**A thin calf with worms in the intestine. Treatment with medicine to kill the worms.**

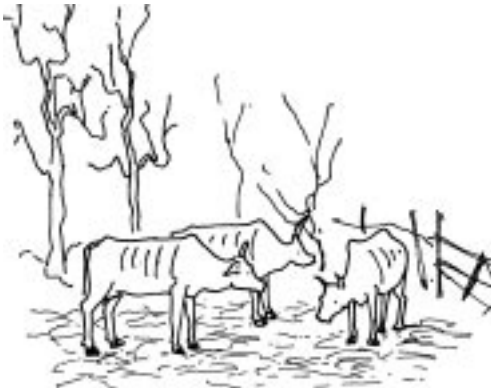
**A thin sow with worms in the intestine. Treatment with medicine to kill the worms.**



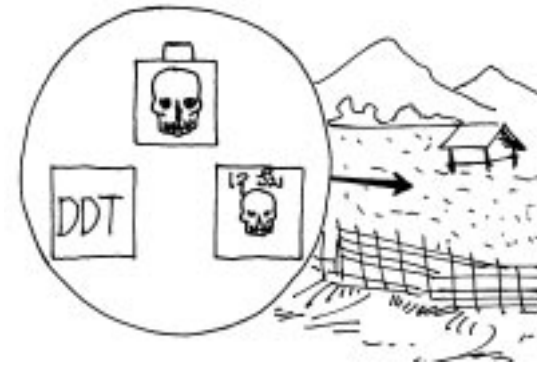


# 2.2.5. Common conditions in which diseases occur

**1. Where animals are in close contact with animals from other villages, e.g. at market.**



**2. Giving feeds of poor quality (too low in energy, protein, minerals and vitamins).**




**3. Feed toxicity, e.g. chemicals carelessly left behind or insecticides mixed with feed.**

**4. Where animals have not received good health care, e.g. regular vaccinations.**

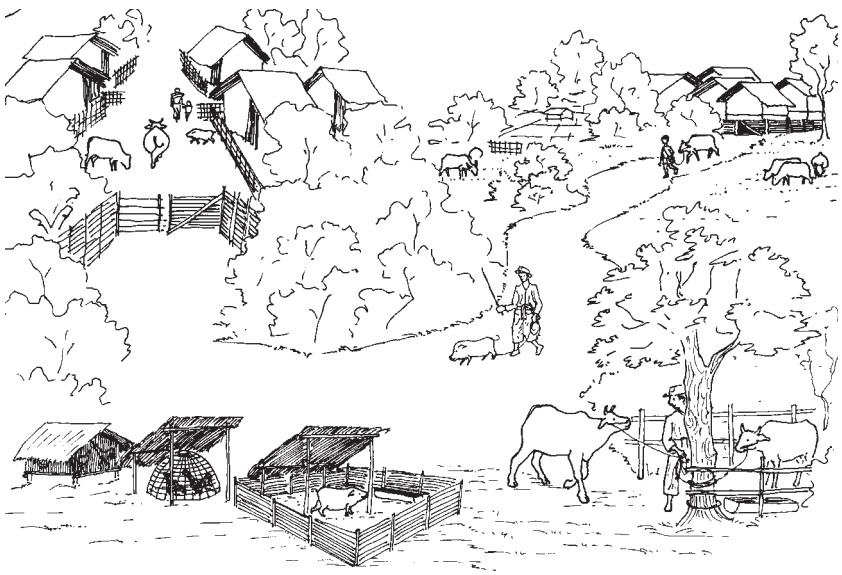
**5. Animals housed together in crowded, dirty stables with little ventilation.**

**6. Where animals graze near rivers, or in swampy, muddy areas.**

# 2.3. Disease prevention

## 2.3.1. Quarantine to reduce the import or spread of disease

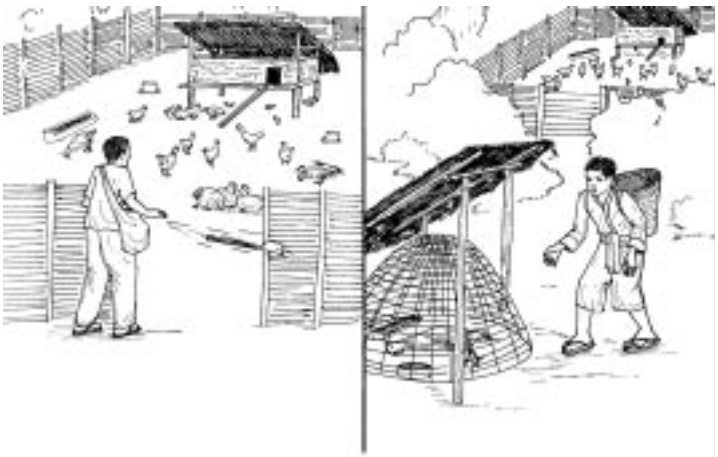
**Stop: no foreign animal can enter our village as they can bring in diseases. Foreign animals, e.g. bought from the market, should be kept in quarantine for two weeks outside the village, before they are allowed in the village. The quarantine place should be simple and for only a few animals at the time.**



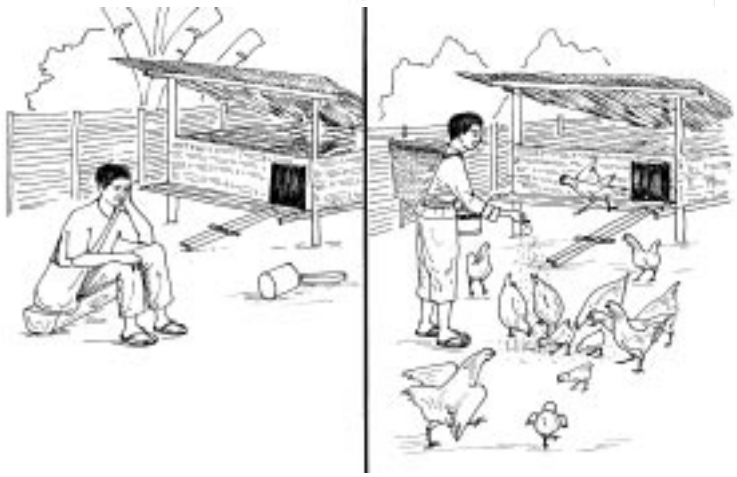
**Diseases are mainly spread from other animals that are already sick or are incubating the disease (when microbes have already entered the animal, but the animal is not showing any signs of disease yet). So if you keep foreign animals away from your healthy animals the disease will not come in.**

# Use of quarantine ( The story of 2 friends )

**One farmer puts the newly bought chicken directly with his poultry flock.
His friend is careful and first puts the newly bought chicken in a quarantine house.**



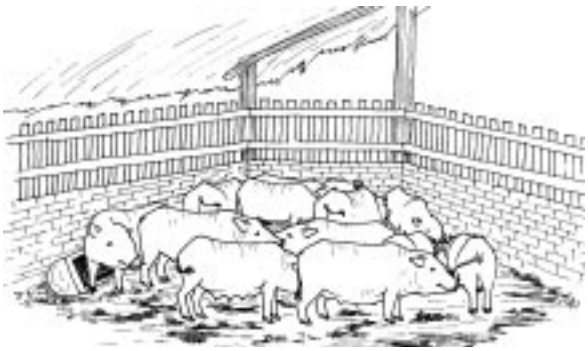
**Unfortunately, after some days they find that the new chicken was already sick and had brought a disease to the village.**



**The first farmer loses many chickens, but the second farmer loses only the new chicken as his poultry flock did not come in contact with the sick chicken.**

# 2.3.2. Good management to reduce disease outbreaks

**Feeds with a high nutritional value make the animal strong to fight off diseases. A dirty barn is a source of diseases: skin diseases, respiratory diseases, worms, fleas, lice, etc. Hygiene is very important; keep the pen and animals clean to prevent diseases. Diseases easily spread from sick to healthy animals. Immediately separate sick animals to stop the spread of disease.**

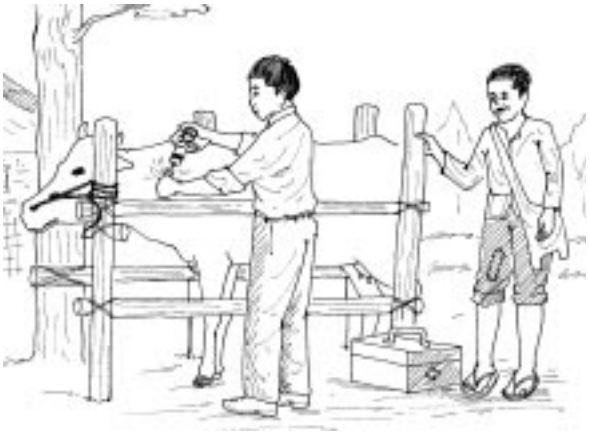


**Microbes and parasites like to live in dirty and humid places. Keep livestock in clean dry pens and regularly remove the manure. Do not keep animals near water that is used by people for washing and drinking. Carcasses of animals that die of unknown causes should be burnt or buried.**

## 2.3.3. Vaccination against specific diseases

**Some diseases, e.g. viral diseases, can not be cured. Animals need to be vaccinated to prevent these diseases (e.g. Foot and Mouth Disease, Classical Swine Fever and Newcastle Disease).**

**Through regular vaccination the animal builds up antibodies to fight attacks of disease. This is called "immunity".**



**Young animals get immunity from the first milk of their mothers. This milk is called colostrum and contains high levels of antibodies.**

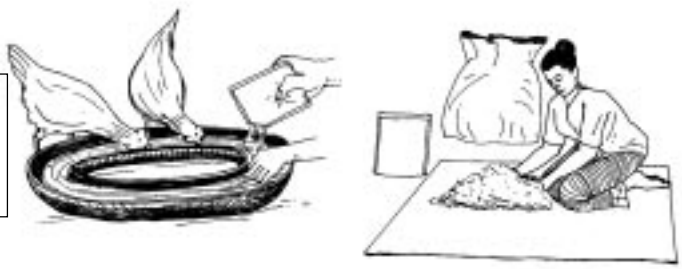
**There are two kinds of IMMUNITY:**
**Passive immunity: The animal receives ready made antibodies. E.g. by feeding the newly born with colostrum. The mother's milk produced during the first hours after birth contains a lot of "antibodies" to prevent specific diseases in the early days and weeks of the newly born animals.**
**Active or acquired immunity: The animal itself produces the antibodies. Vaccination with weakened or killed bacteria or virus stimulates the animal to build up immunity (see also chapter 2.4.2.). There are different vaccines for different infectious diseases. DO NOT vaccinate sick animals.**

# 2.3.4. Strategic treatment for worm infections

**Disease by infection with intestinal worms can be prevented by deworming animals at specific times, before the worms can cause disease. This is called strategic treatment. See also VVW module 3: Animal diseases.**

**Infection with Toxocara vitulorum is a major cause of mortality in young buffalo calves; it also occurs in cattle calves. Young calves should be dewormed with 250 mg of Pyrantel at the age of 14 to 21 days to prevent Toxocariasis.**

**Coccidiostats (e.g. Amprolium) can be added and mixed in poultry feeds to prevent Coccidiosis.**



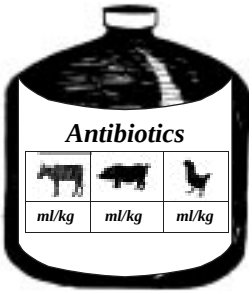
**Regular treatment by injection with Ivermectin will kill internal parasites (worms) as well as external parasites (mites causing mange). Other products can be used for deworming as well, e.g. mebendazole.**

# 2.4. Medicines

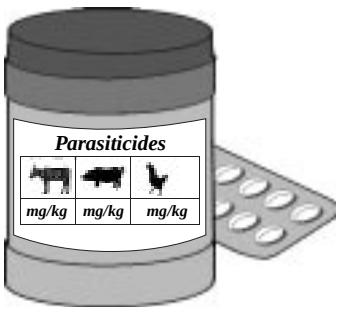
## 2.4.1. Different medicines

**Vaccines prevent animals getting diseases caused by bacteria and viruses. Vaccines are for preventing diseases, not for treating them. Do not vaccinate sick animals, this will make the animals worse.**


**Antibiotics kill bacteria and cure diseases caused by bacteria. Remember there are no medicines to kill viruses. There are different antibiotics to cure different diseases.**




**Parasiticides kill parasites. Some parasiticides kill only internal parasites (anthelmintics kill worms, e.g. Pyrantel). Other parasiticides kill external parasites as well (e.g. Ivermectin kills worms and mites).**

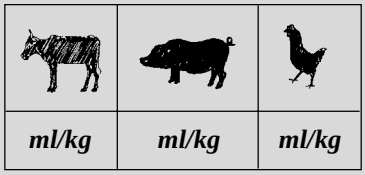



**Nutrient medicines consist of good parts of feeds in a concentrated form. Nutrient medicines do not kill microbes, but provide extra vitamins and minerals when sick animals can not obtain sufficient quantities from their feed. There are 2 groups:**

- **Vitamin and mineral medicines: concentrated feed supplements.**
- **Rehydration medicines: to prevent dehydration caused by diarrhoea.**

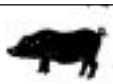
**Nutrient medicines**

- **vitamins and minerals**
- **rehydration medicines**

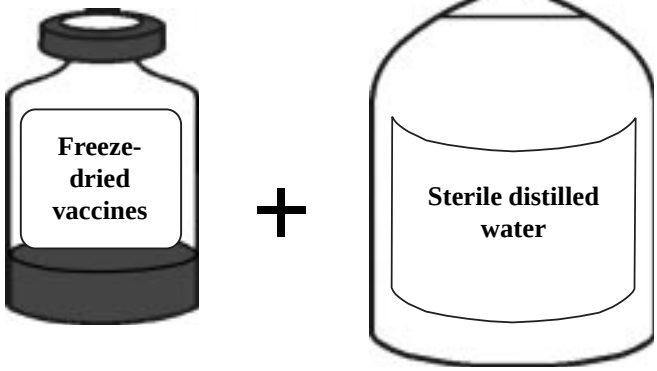


**Antiseptics are weak chemicals for treating wounds; they kill microbes but will not damage the flesh of the animal. Disinfectants are strong chemicals to clean instruments (e.g. syringes) and contaminated pens. They kill microbes.**


**The dosage of most medicines depends on the body weight of the animal (mg per kg body weight).**

| Animal | Light - Heavy | Body weight kg |
|---|---|---|
|  | Mature: cattle – buffalo | 250 – 500 |
| | Calf: cattle – buffalo | 20 – 30 |
|  | Mature pig: native – white | 60 – 120 |
| | Weaner pig: native – white | 5 – 10 |
|  | Mature chicken: light – heavy | 3 - 4 |
| | Pullet chicken: light – heavy | 1- 2 |

**Some products like freeze-dried vaccines, need to be diluted with sterile water before injection.**
**Other medicines are tablets and need to be mixed in feed or water (for oral dosing).**



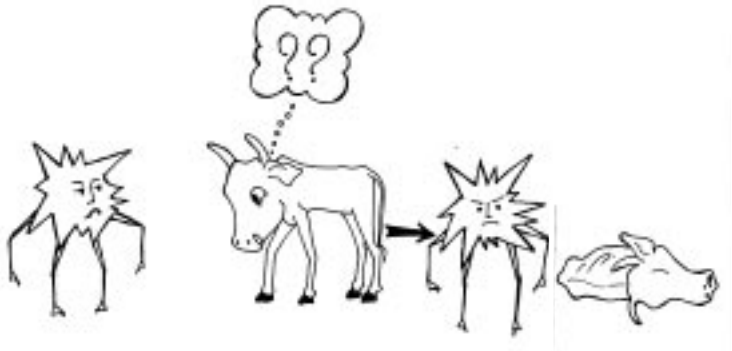

**A special note on medicines and vaccines**

**Medicines like antibiotics, anti-parasitics and other chemicals kill or curb the growth of microbes or pathogens. They are used for treatment of sick animals. The VVW should always have medicines with him to treat animals. DAFO should stock a sufficient supply of different medicines as they are easy to keep and do not require refrigeration.**

**Vaccines are made from live, but weakened or killed virus or bacteria. When the vaccine is injected into the animal, it is similar to causing a natural infection by the same specific disease, only the reactions are milder. The animals normally recover within days and remain resistant to the disease for a certain period. Vaccines are used to prevent healthy animals from contracting diseases. Most vaccines are fragile and need to be kept cold. The VVW therefore needs to order vaccines in advance with DAFO/PAFO and administer the vaccine as soon as possible. Do not keep large stocks but instead replenish your small stocks regularly.**

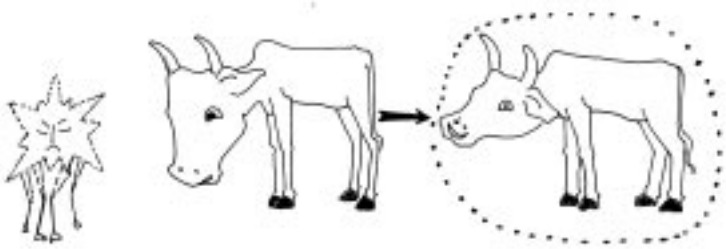
# 2.4.2. Vaccination

***1. No vaccination.***
***Microbes attack the animal and cause disease.***



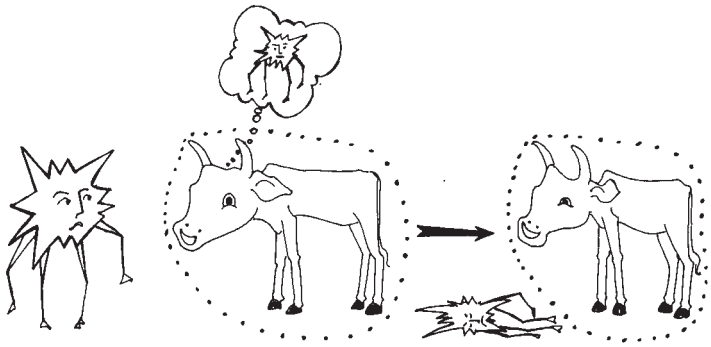
**The animal does not have help from antibodies to recognize and fight the microbes.**

***2. Vaccination.***
***The dead or weak microbes in the vaccine produce antibodies in the blood.***



**The animal now has antibodies to help recognize the microbes and fight them if they invade the body.**

***3. Mircobe attack.***
***The vaccinated animal will not become sick.***



**The antibodies recognize the microbes and kill them. The animal remains healthy.**

# 2.5. Basic knowledge on the use of medicines

## 2.5.1. Classification of medicines

**Once a disease has been diagnosed, safe and effective medicines should be selected for treatment. Medicines come in different forms. Correct dosage and frequency of administration and proper route for delivery are required for the treatment to be effective. There may be several reasons why medicines do not work. The use of medicines is subject to government public health regulations.**

**Medicines can be classified in several ways. For instance:**

**A. According to usage: vaccines, antibiotics, antiparasitics, nutrient medicines, disinfectants, etc. Chapter 2.4.1. is based on this classification.**

**B. According to presentation or form: liquids, powders or premixes, tablets and capsules, injections, ointments, etc. Below are examples of different forms of medicines.**

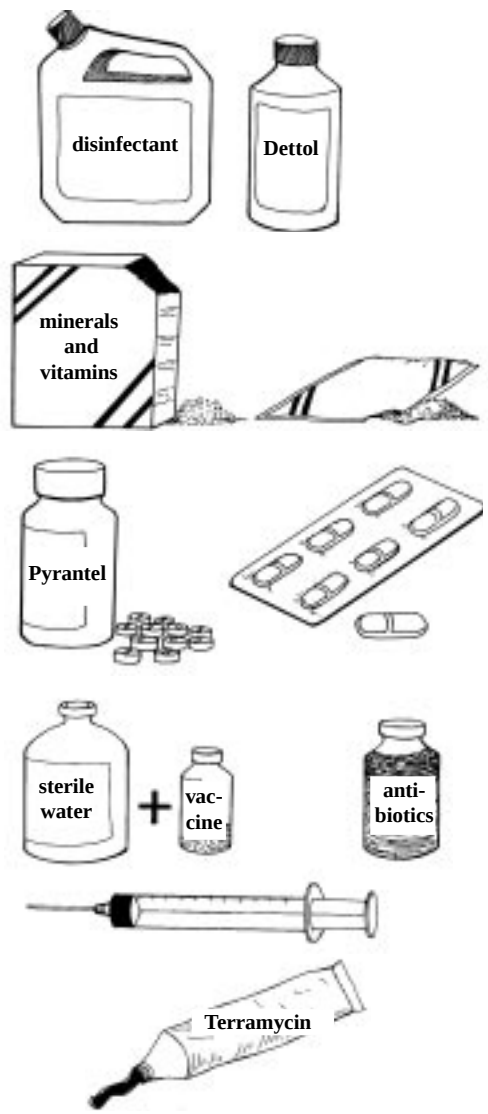
**Liquids: These vary from watery to as thick as oil.**
**Example: disinfectants**

**Powders or premixes: These vary from fine flour-like powder to rough crystal like salt. Their color, smell and texture vary. They have to be dissolved in water or added to the feed.**
**Example: mineral premixes**

**Tablets and capsules: Tablets are also called pills. Large tablets are called boluses. Capsules are small and have powdered medicine inside. Size and color of tablets and capsules may vary.**
**Example: deworming tablets**

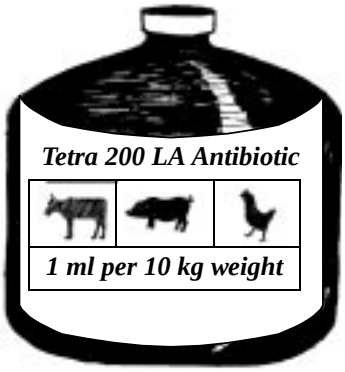
**Injectables: Injectables come in both powder (which needs to be dissolved in water) and liquid forms. These medicines are injected under the skin or into the muscle using a syringe and needle.**
**Example: antibiotics and vaccines**

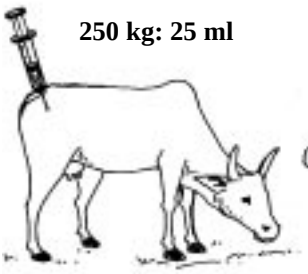
**Ointments: An ointment is a pasty substance and is for external use only.**
**Example: antibiotic ointment**

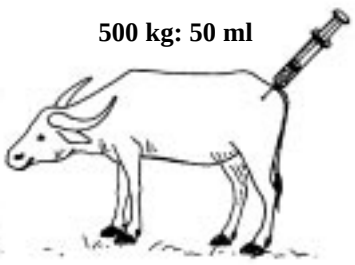


# 2.5.2. Dosage

**The correct dosage should be used. A dose that is too low will not kill the organism that is causing the disease. A dose that is too high is expensive and may be harmful to the animal. Example: Tetra 200-LA needs to be used as 1 ml per 10 kg body weight.**

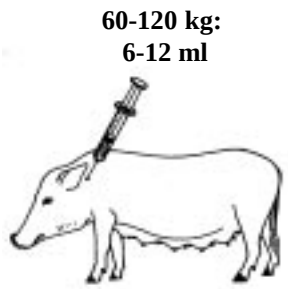


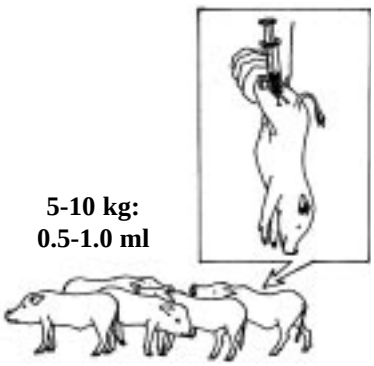





**The correct dosage is calculated according to age and body weight. It is also based on the kind of animal. For example: even when the body weight is the same, a calf and a dog may need different doses of medicine.**



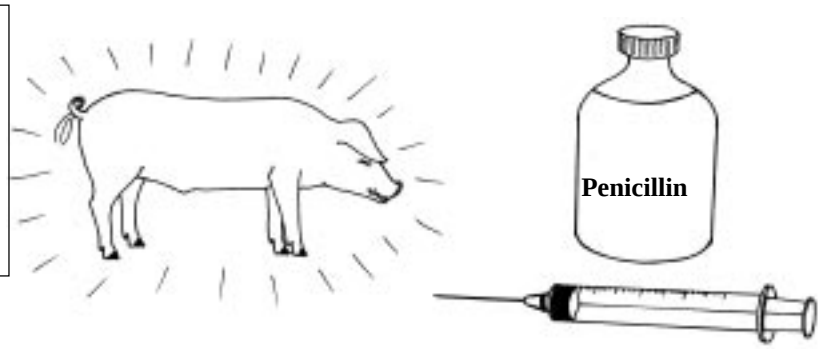





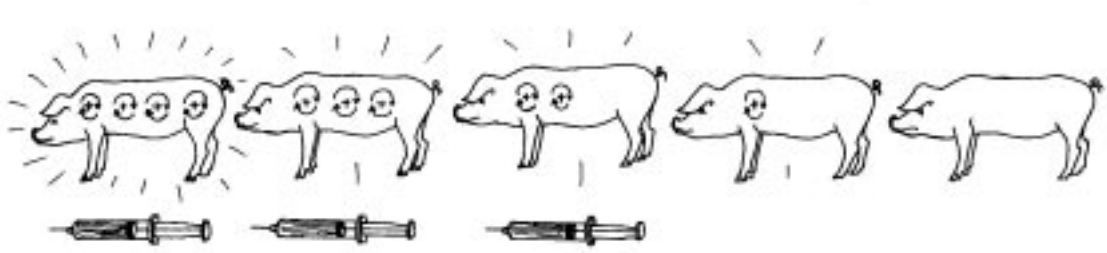
# 2.5.3. Frequency of administration

**The frequency of administration depends on the type of drug and the disease.**

**Example: using Penicillin to treat infection in pigs.**




- **Give the required dose once a day, each day at the same time.**
- **Penicillin should be given each day for at least 3 consecutive days.**



**Important:**

1) **If the treatment is stopped too soon, the medicine may not have enough time to work effectively. The disease may return and it will be harder to treat the second time.**
2) **Often it will take a few extra days before the treatment is fully effective in treating the disease.**

# 2.5.4. Route of administration

**There are 3 major ways in which medicines can be administered: a) orally, b) by injection and c) topically. The method of choice depends on several factors:**

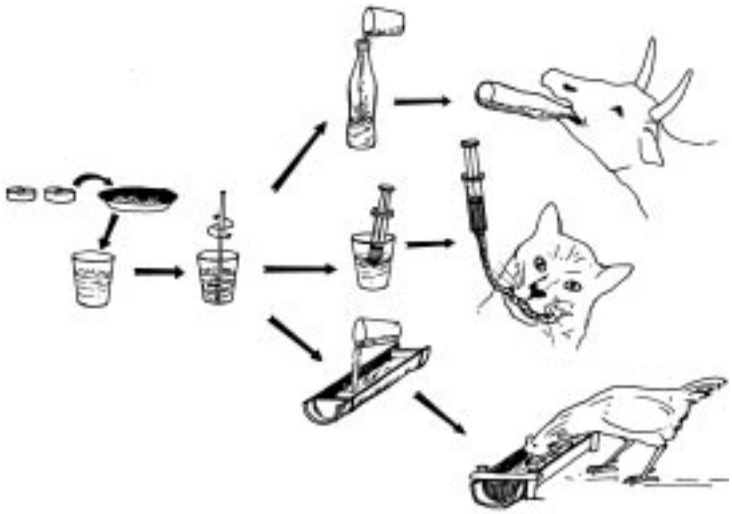
- **Antibiotics are injected in the muscle in order to achieve immediate effect.**
- **Vaccines are usually given under the skin so that the pathogen can be released slowly.**
- **Most poultry medicines are given orally because of convenience.**

## A) Oral administration of medicines

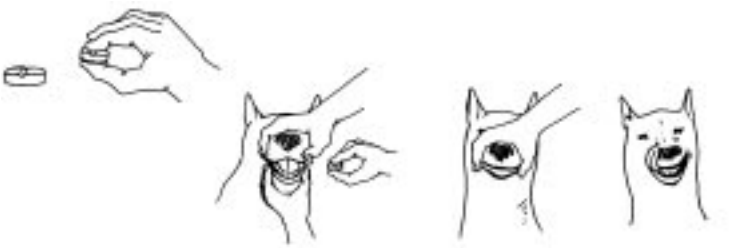
**Tablets are crushed to powder and mixed in feed.**

**Never give antibiotics by mouth to ruminants.**

**Tablets or powder are well mixed in water. This solution can be put in a bottle (for cattle, buffalo), in a syringe (with tubing for pigs, dogs and cats) or in the feed (for all animal types). Take care that the solution goes into the gullet and not into the windpipe.**



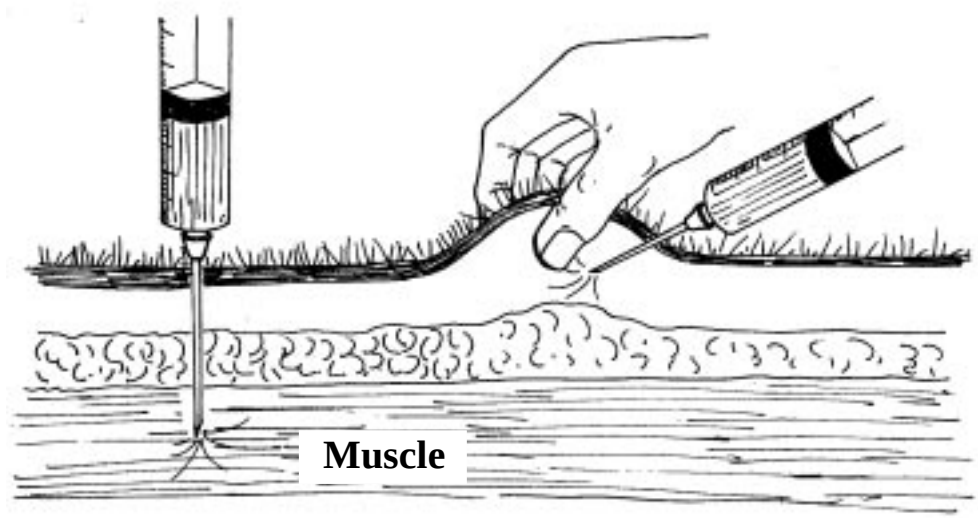
**Forced administration. Open the mouth, put the medicine on the back of the tongue, and close the mouth for 5 seconds. Licking means that the animal has swallowed the medicine.**



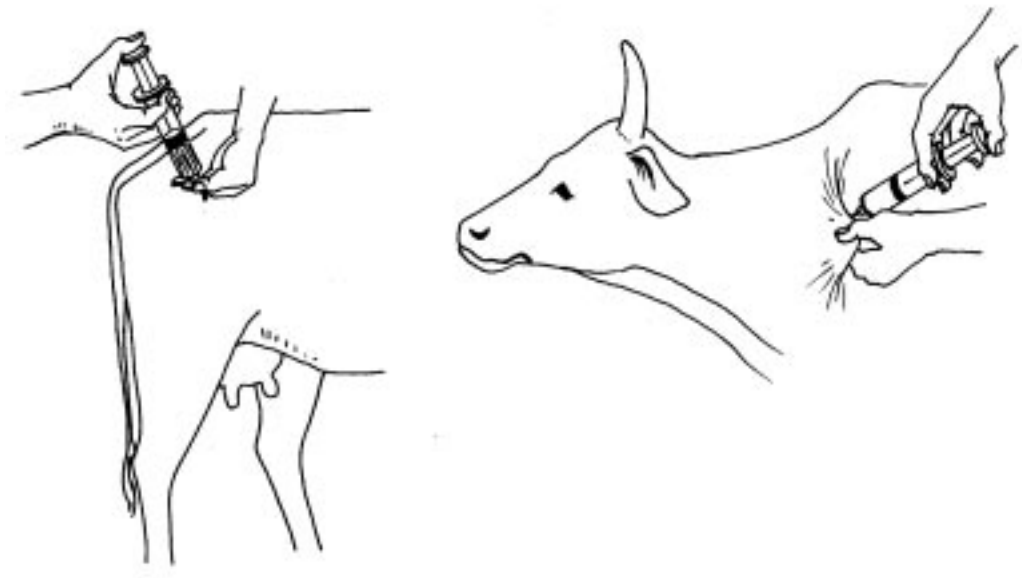
**B) Administration of medicines by injection. There are 3 methods of giving an injection:**

- **Under the skin (sub-cutaneous or SC).**
- **Into the muscle (intra-muscular or IM).**
- **Into the blood vessel (intra-venous or IV).**

**Intra-muscular injection** | **Sub-cutaneous injection**

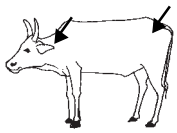
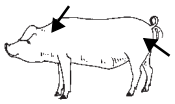
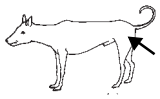
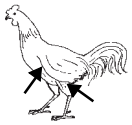
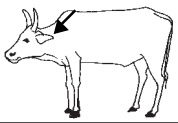
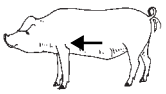
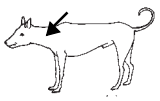
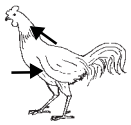



**Intra-muscular injection** | **Sub-cutaneous injection**



**Only a veterinarian should give injections into the blood (intra-venous).**

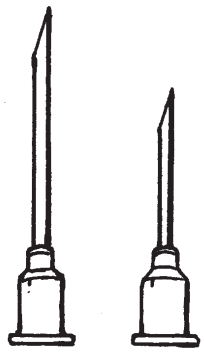
**How to give injections.**

| | Cattle, buffalo | Pig | Dog, cat | Poultry |
|---|---|---|---|---|
| **Intra-muscular injection (IM)** |  |  |  |  |
| **Needle** | **G 16-18, 1.5”** | **G 18-20, 1.5”** | **G 18-20, 1.0”** | **G 20-21, 0.75”** |
| **Sub-cutaneous injection (SC)** |  |  |  |  |
| **Needle** | **G 16-18, 1.0”** | **G 18-20, 0.75”** | **G 18-20, 1.0”** | **G 20-21, 0.5”** |

**Which injection needles to use.**
**Longer needles are used for intra-muscular injections and shorter needles for sub-cutaneous injections. Bigger animals require thicker needles (lower gauge!). Examples:**

- **16 or 18 gauge 1.5-inch long needle is used for intra-muscular injections in cattle & buffalo.**
- **16 or 18 gauge 1-inch long needle is used for sub-cutaneous injections in cattle & buffalo.**
- **18 or 20 gauge 1-inch long needle can be used for all injections in pigs, goats and dogs.**
- **20 or 21 gauge 0.5-0.75 inch long needle can be used for all injections in piglets.**
- **20 or 21 gauge 1-inch long needle is good for intra-muscular injections in poultry.**
- **20 or 21 gauge of 0.5-inch long needle is used for sub-cutaneous injections in poultry.**

**1.5 – 1.0 inch long**

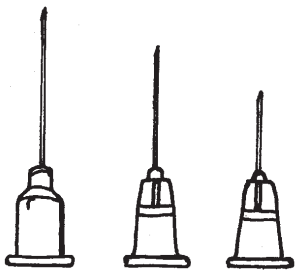


**16 – 18 Gauge thick**

**1.0 inch long**

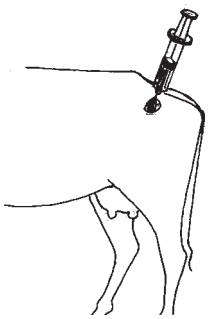
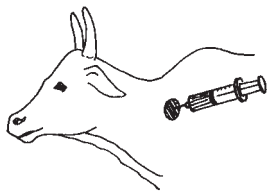
**18 – 20 Gauge thick**

**1.0, 0.75, 0.5 inch long**

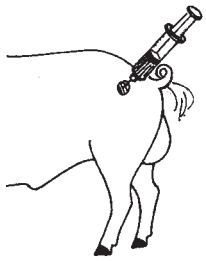
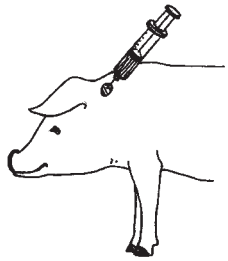


**20 – 21 Gauge thick**

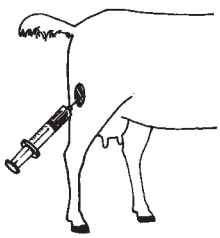
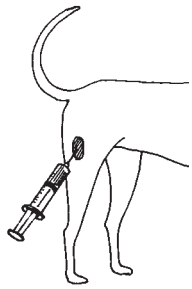
**How do we administer an intra-muscular injection?**
**First choose the injection site. The injection site varies according to the kind of animal.**

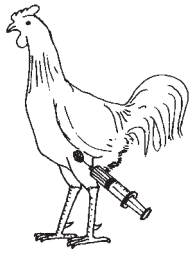
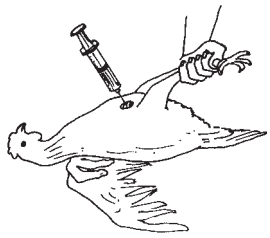
**Cow & buffalo: above the hip or in the neck muscle**

**Pig: the upper back leg or in the neck muscle**

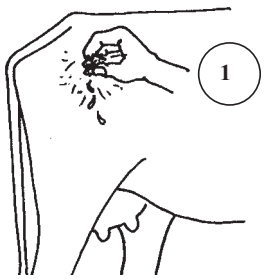



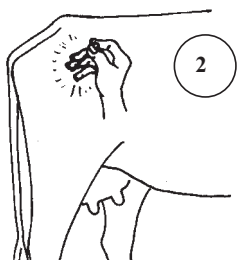
**Goat and dog: the muscle at the back of the leg**

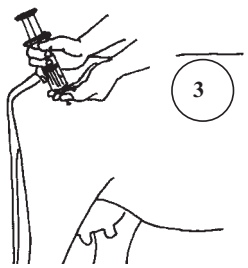



**Poultry: in the thigh or breast**

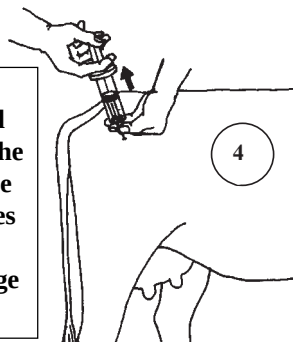
**When the site for injection has been chosen then:**
**(1) Clean the skin using Dettol, alcohol, etc.**
**(2) Hit the injection site 3 times with the hand, then completely insert the needle.**
**(3) Attach the syringe tightly to the needle.**

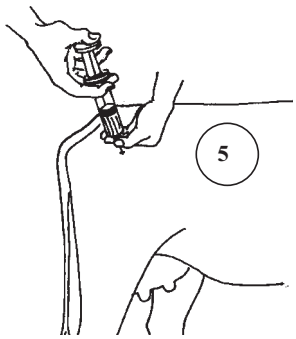




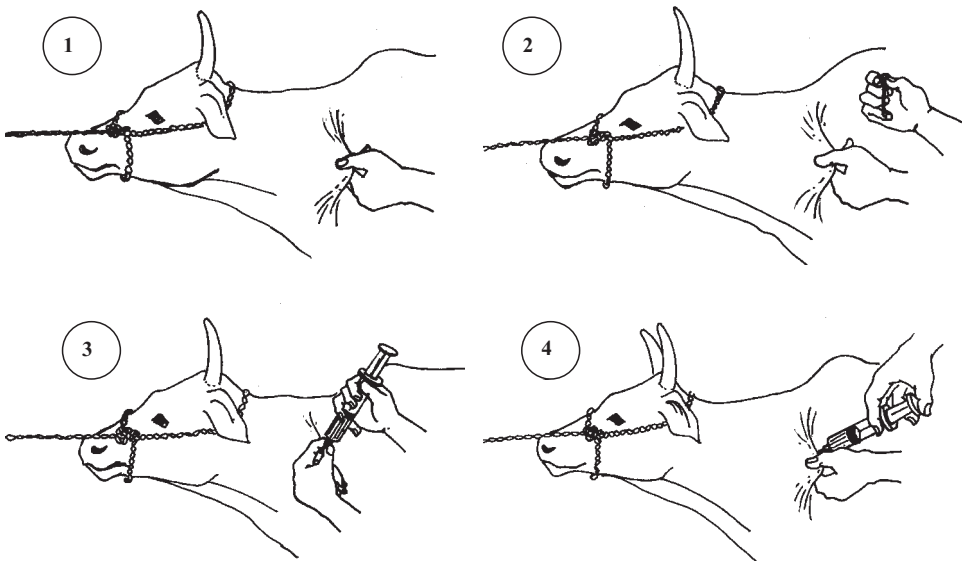



**(4) Pull the syringe plunger a little to check that the needle is not in a blood vessel. If you see blood coming into the syringe, remove the needle and choose a new injection site. If no blood comes into the syringe, inject the medicine.**
**(5) After removing the needle, massage the injection site.**





**How do we administer a sub-cutaneous injection?**
**Sub-cutaneous injections are given under the loose skin, often in the neck area.**




**(1) Clean the area before inserting the needle. Pull up the loose skin and insert the needle. In you are injecting a live vaccine, do not use disinfectant on the site of injection.**
**(2) Attach the syringe tightly to the needle and pull outward on the skin and needle together.**
**(3) Inject the medicine under the skin. It should go in easily. If not, the needle is not in the right place.**
**(4) After injecting the medicine, remove the needle and massage the injection site.**

**Cow and buffalo:**

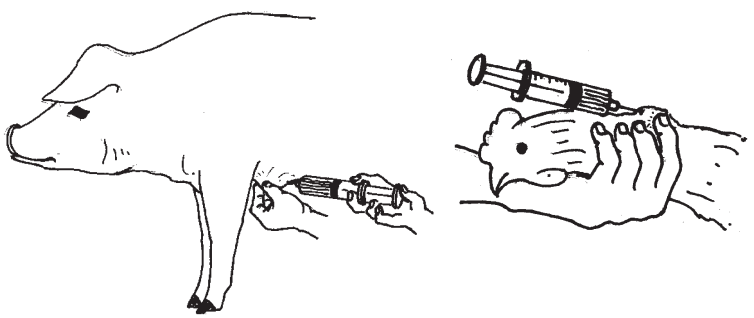
- **loose skin of the neck**

**Pig:**

- **loose skin of the neck**
- **loose skin of the chest**

**Poultry:**

- **loose skin of the neck**
- **loose skin of the breast**

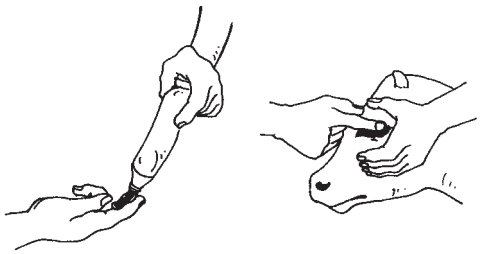


**After injection, syringes and needles must be cleaned and sterilized before they are used again.**

**C) Topical administration of medicines. These are medicines for external use only, like:**

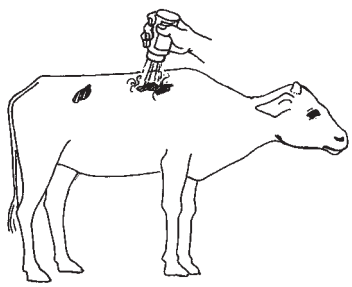
- **Ointments (e.g. to apply to a wound).**
- **Liquids (e.g. to disinfect a wound).**
- **Powders (e.g. to dust onto a wound).**
- **Liquid drops (e.g. eye-drop vaccination of chickens).**

**Ointments for an eye or wound problem (e.g. Terramycin ointment).**



**Liquids for disinfecting a wound (e.g. Dettol).**

**Powder to dust a wound (e.g. Negasunt).**

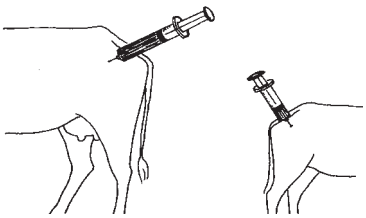


**Eye drops (e.g. NcD –F vaccination).**

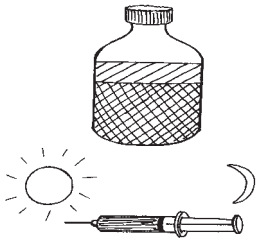
# 2.5.5. Why medicines do not always work.

**1. The animal was treated too late.**
**Treatment may not work once the condition has become too severe or longstanding. When the owner waits too long to call the VVW, the owner is to blame when treatment is not effective.**

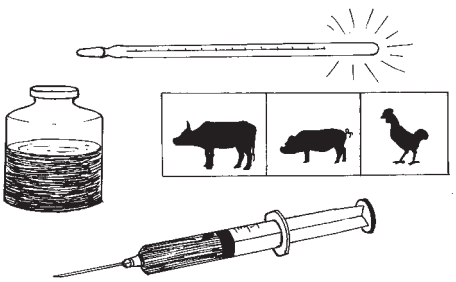
**2. Incorrect dose.**
**If the estimated dose is incorrect (e.g. too small), the treatment may not work. The dose is calculated according to the body weight of the animal.**



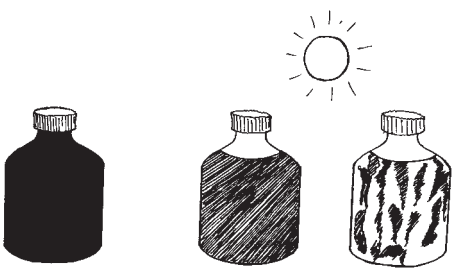
**3. Medicines were not given regularly.**
**If the medicine is not given regularly, or if the treatment is stopped too soon, the treatment may not be effective. The required dose must be given at regular times every day.**



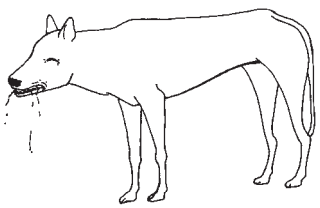
**4. The correct medicine was not used.**
**If the correct medicine was not used, the animal may not get better. Different types of medicines should be used depending on the disease and the kind of animal.**



**5. Damaged medicines.**
**Damaged medicines do not work and become dangerous. Medicines have a "shelf-life" after which they do not work well. Most manufactures stamp an expiry date on the packing. Medicines may become damaged due to exposure to heat, sunlight or water.**

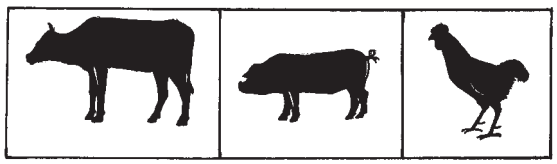


**6. Some diseases can not be treated.**
**Not all diseases can be treated. For example there is no treatment for rabies once the signs appear. The animal will die.**

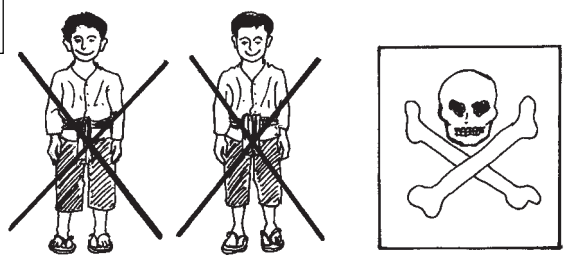


# 2.5.6. Public health concerns and government regulations

**Some drugs may be dangerous to humans or to the environment.**
**Veterinary medicines should not be used to treat humans.**

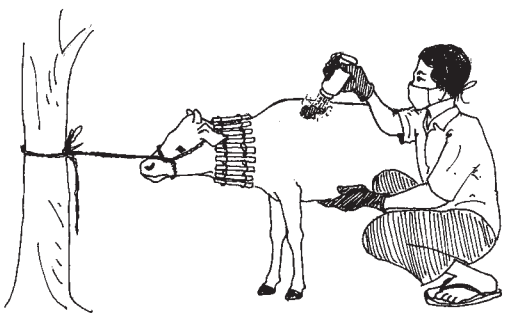


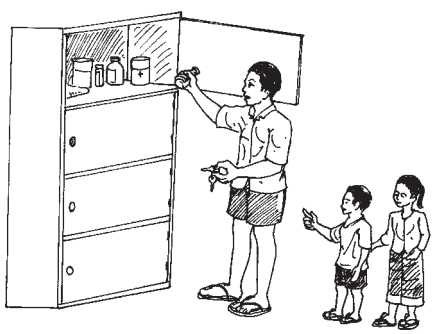
**Some medicines, e.g. insecticides, can be dangerous for humans. If these medicines are not handled properly, they can cause sickness and death in both people and animals.**



**Precautions:**

1) **Use plastic gloves and cover your nose and mouth. After you finish using the product, wash yourself.**
2) **Avoid getting medicine into an animal's eyes, nose or mouth. A neckband or muzzle can be used to prevent the animal from licking medication from the skin.**
3) **Do not store medicines with food and keep all medicines away from children.**
4) **Expired or unused medicines should be buried. Do not dispose of them near a water source and do not re-use medicine bottles for other purposes.**





**Government regulations are explained in "Regulations affecting VVWs" (see introduction).**
**Important diseases need to be reported to the local authorities in order to:**

1) **Prevent the spread of contagious diseases.**
2) **Raise awareness about contagious diseases occurring in the village.**
3) **Make use of the help available at the government livestock office to stop the disease.**

# 2.6. Organization of vaccination campaigns

## 2.6.1. Vaccination strategies

**1. Community based vaccination campaigns.**

**Use this strategy when animals are herded together (or free range) and for diseases that occur seasonally. Example: HS vaccination every 6 months for cattle and buffalo. The high participation of villagers is necessary to be effective in the prevention of HS disease outbreaks.**

**2. Farmer based vaccination program.**

**Use this strategy for animals that are kept commercially (penned) by individual farmers. Examples: NcD and FC vaccination every 3 months for poultry; CSF vaccination every 6 months for pigs. As chicks and piglets are hatched/ born regularly, a 3-monthly program is required for effective vaccination.**

**3. Emergency vaccination campaigns.**

**This strategy is required in the case of disease outbreaks. Example: FMD outbreaks can be controlled by "ring" vaccination to prevent further spreading of the disease. Emergency vaccination is described in Section 4 of the Regulation on Livestock Management in Lao PDR.**

# 2.6.2. Organizing the village for a vaccination campaign

**Organize village meetings to promote the vaccination campaign. The majority of villagers should give vaccinations regularly and on time.**

**The VVW needs to calculate how much vaccine is required. He also needs to estimate other costs (such as transport, ice, disinfectants, needles). Finally, he has to calculate how much to charge the farmers in order that he can make a small profit.**

| Name of vaccine and ml | Price per bottle | Addition of sterile water | Dose per animal (ml) | Doses per bottle | Price per dose | Farmer pays per animal |
|---|---|---|---|---|---|---|
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| | | | | | | |
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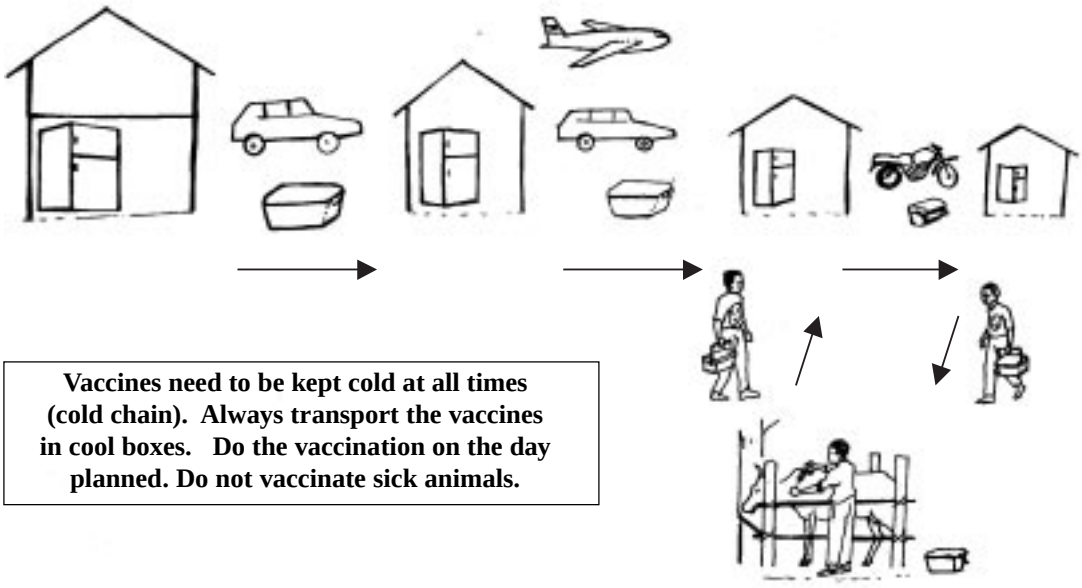
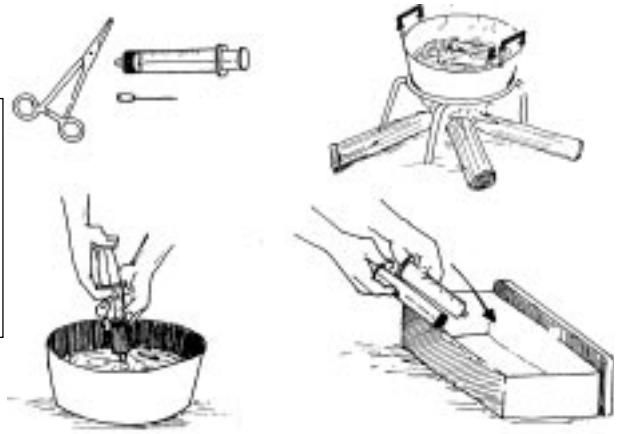
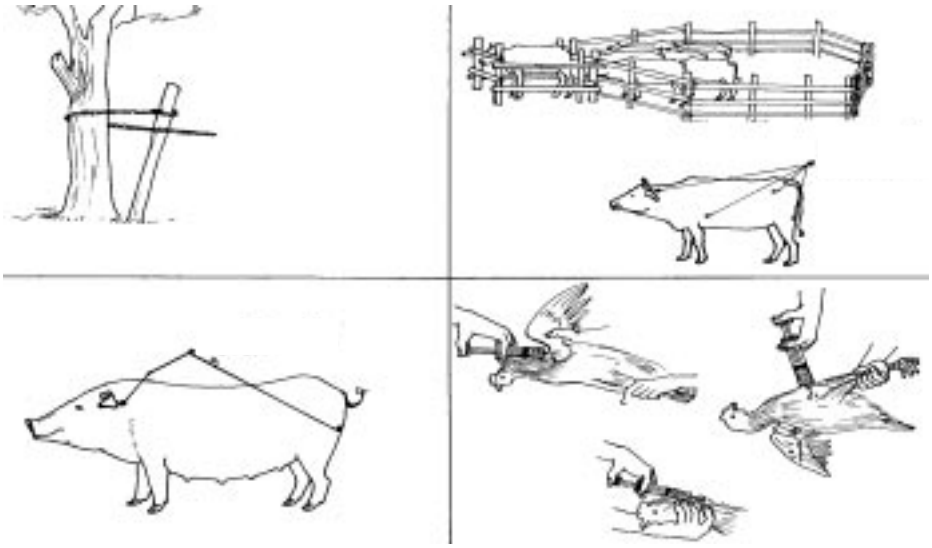


**Vaccines need to be kept cold at all times (cold chain). Always transport the vaccines in cool boxes. Do the vaccination on the day planned. Do not vaccinate sick animals.**

# 2.6.3. Vaccination and restraining techniques

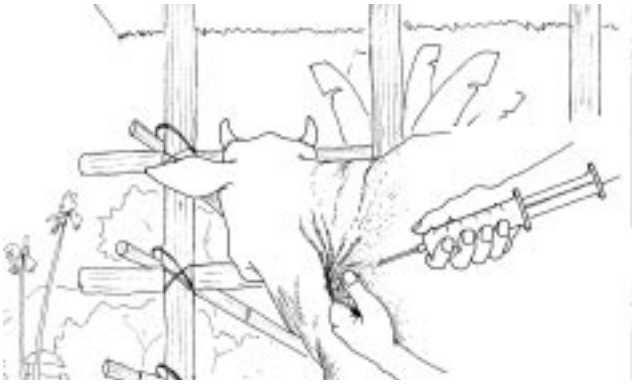
**Syringes and needles must be cleaned and sterilized (to kill germs) before they are re-used. Put the syringe and needles in a clean cooking pan with clean water and boil for 15 minutes. Syringes must be separated into plunger and barrel for sterilizing.**

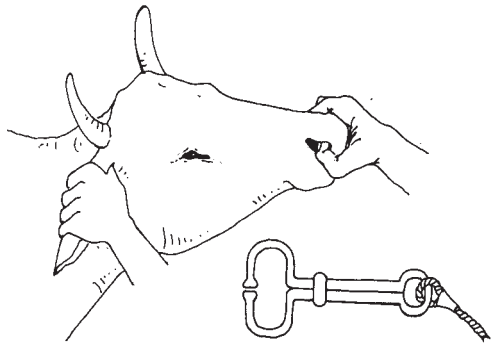




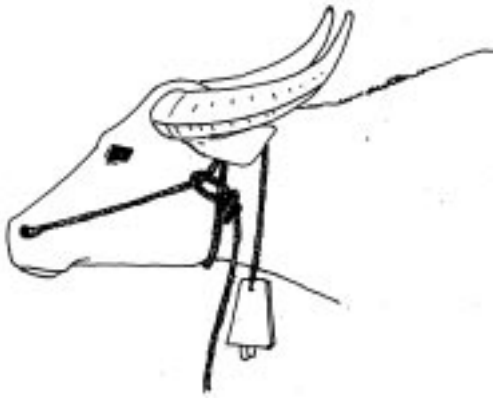
**A bleeding pole or cattle crush is used to restrain buffalo and cattle. The different vaccination techniques are: intra-muscular injection (in the muscle of the hip, upper back leg, middle of neck, shoulder or chest muscles), subcutaneous injection (under the skin) and eye and nose drops.**

**The subcutaneous injection (e.g. for HS and FC vaccination) is under the skin. It is done by picking up a loose fold of skin between the neck and shoulder.**

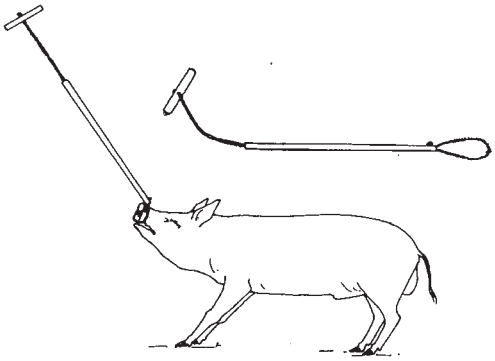


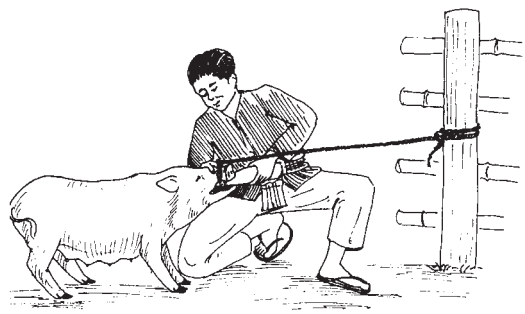


**Cattle and buffalo can be restrained by gripping the jaw or the nose. Pull the head close to you to hold it firmly. Use a nose-grip for strong animals.**



**Permanent nose-halters are used for everyday handling of cattle and buffalo.
A removable halter can be made from a 3 meter length of rope with a small loop.**





**A pig snare is used to restrain large pigs. It consists of a cable or rope, which is passed through a tube and attached to a handle. To use a pig snare, the loop is loosened, slipped inside the mouth and then tightened over the top of the snout.**

# NOTES

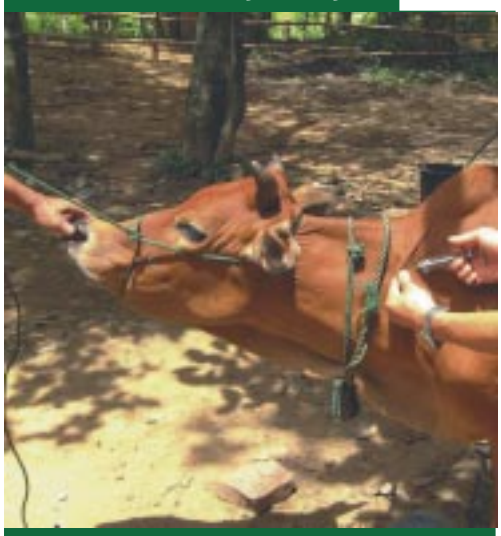
ການຂ້າແມ່ພະຍາດການຝາກໃຫ້ງົວ-ຄວາຍນ້ອຍ

**De-worming of buffalo calves**

ນຳໃຊ້ຢາໃຫ້ຖືກຕ້ອງຕາມປະລິມານນຳໃຊ້

**Use the right dosage**

ວິທີການສັກຢາກ້ອງລຶບໜັງ



**Subcutaneous injection**

ວິທີການສັກຢາ ເຂົ້າກ້າມຊີ້ນ

**Intra-muscular injection**

# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

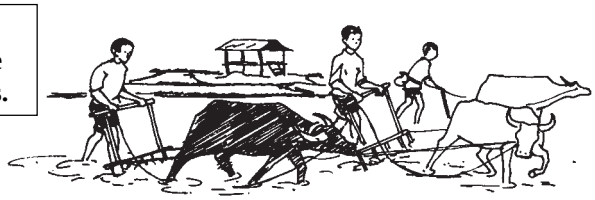
# 3.1. Ruminant (cattle and buffalo) diseases

## 3.1.1. Haemorrhagic septicaemia

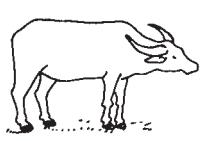
**This disease is caused by bacteria and affects buffalo and cattle. Young animals are more susceptible than older ones. The disease mostly occurs at the start of the rainy season, but can also occur at other times. The disease usually occurs when animals are weak or stressed.**

**A small number of animals have the bacteria in their throat but show no symptoms (carrier animals).**

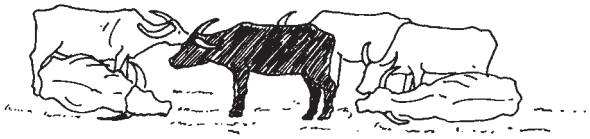
**When animals are stressed (after heavy work), the bacteria multiply and leave the carrier animal able to infect other animals.**



**The newly infected animal becomes sick with a swollen neck and abdomen; it will have a high temperature and salivate.**



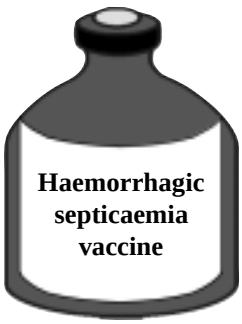
**If not treated quickly, the sick animal will die.**



| **Treatment:** Antibiotics should be used very early to kill the bacteria. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Vaccinate with Haemorrhagic septicaemia vaccine (every 6 months).**
- **Reduce stress and give high quality feed and water.**
- **Animals with a fever should be treated immediately.**
- **Avoid contact with sick animals.**



# Medicine use according to the label

| Affix label |
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| **Calculation of dose per animal** |
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| **Calculation of cost and profit** |
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| **Directions for use** |
| |

# 3.1.2. Anthrax

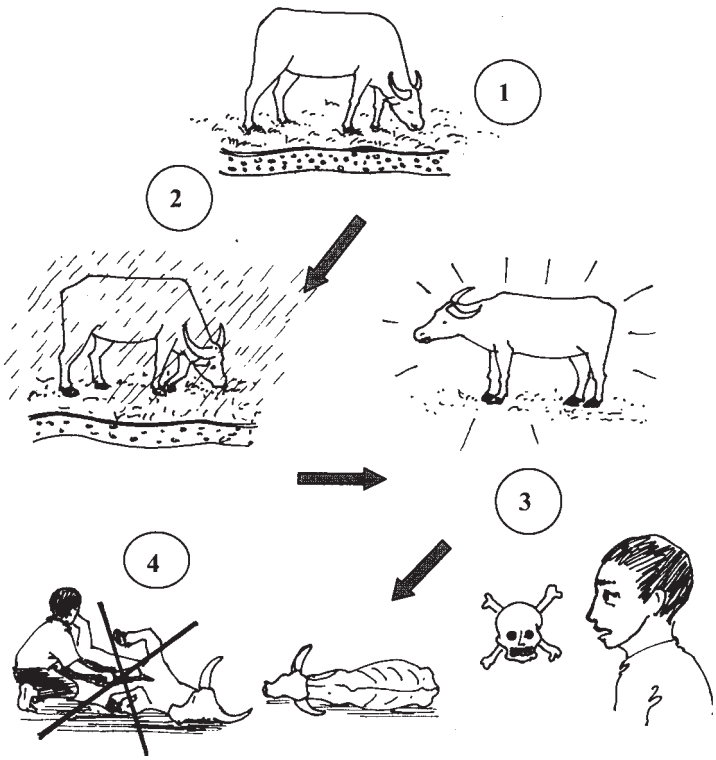
**Anthrax is caused by bacteria. Anthrax bacteria can affect cattle, buffaloes, pigs, sheep, goats, horses and humans. When these bacteria come into contact with air, they form spores which can resist heat and drying, and can survive in the soil for many years.**

**1. Anthrax spores survive in the soil for many years.**

**2. Bacteria are transmitted from the soil to the animal.**

**3. The animal has a high temperature, and staggers for 1-2 days.**

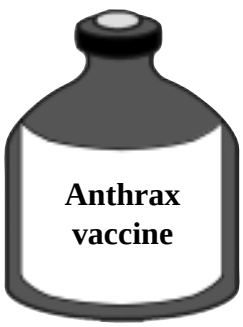
**4. The animal dies. Black blood comes out of the orifices. The carcass should not be opened or eaten.**




| **Treatment:** Antibiotics should be used very early to kill the bacteria . | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **In areas with a history of Anthrax outbreaks, cattle and buffalo should be vaccinated with Anthrax vaccine.**
- **Sick animals with a fever should be treated immediately.**
- **Animals that have died from Anthrax should be burned or buried deeply, no post-mortem should be carried out.**
- **Healthy animals should be kept away from areas where animals have died from Anthrax.**



# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.1.3. Blackleg

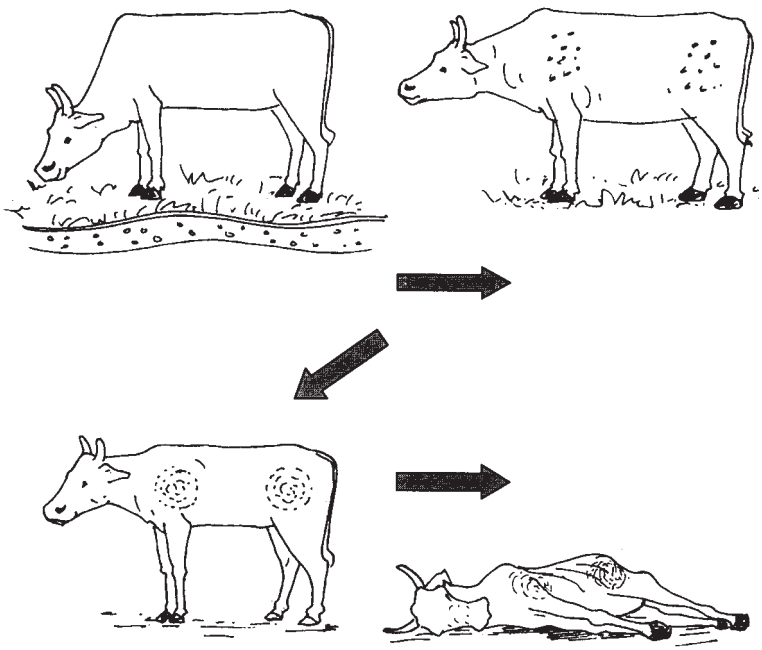
**Blackleg is caused by bacteria. The disease affects mostly cattle of less than three years of age, but may also affect buffaloes.**

**Blackleg bacteria live in the soil of some areas.**

**Bacteria may live in the muscles, but the animal shows no symptoms.**

**Under some conditions, e.g. when the animal has muscle bruising, the bacteria multiply. This causes a fever and hot painful swellings.**

**The animal will die unless treated quickly.**



| **Treatment:** Antibiotics should be used very early to kill the bacteria. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **In areas with history of Blackleg outbreaks, cattle and buffalo should be vaccinated with Blackleg vaccine.**
- **When there is an out-break, the dead animals should be burned or buried. Animals should be closely monitored and treated if they have a high temperature.**

# Medicine use according to the label

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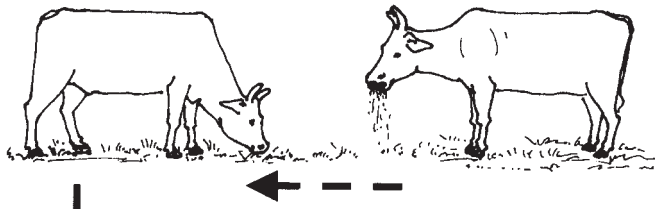
|---|
| **Affix label** |
| **Calculation of dose per animal** |
| **Calculation of cost and profit** |
| **Directions for use** |

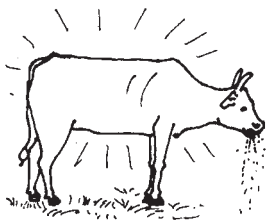
# 3.1.4. Foot and Mouth Disease

**Foot and Mouth Disease is caused by a virus. Outbreaks of FMD occur in cattle, buffalo, pigs, sheep and goats. Important signs are an initial high temperature and later blister formation in the mouth and on the feet. Usually this disease does not kill animals, but causes high production losses which are economically important.**

**Transmission from infected to non-infected animal.**

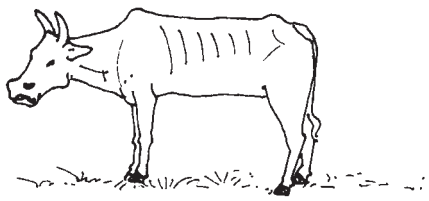


**High temperature, followed by sore mouth and feet.**



**The temperature falls, but the mouth and feet remain sore and the animal is reluctant to move.**

**Adult animals usually recover, but have lost weight.**

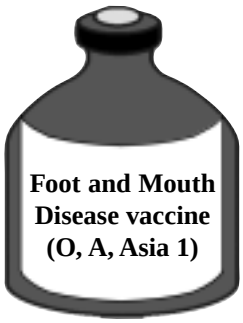


**Treatment:** **There are no medicines that can kill the virus.**

**But you can clean the blisters with medicines such as iodine or water mixed with sour fluids such as lemon juice. You could also use antibiotics as bacteria can enter the animal through the wounds in the mouth or on the feet, making the recovery time longer.**

**Prevention:**

- **This disease can be prevented by vaccination with Foot and Mouth Disease vaccine.**
- **When there is a disease outbreak, animal movement should be stopped so that non-infected animals do not come into close contact with infected animals.**



# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
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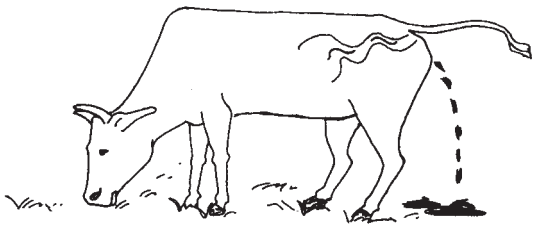
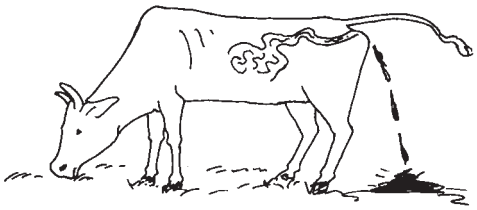
# 3.1.5. Roundworm

**There are many types of roundworms that may live in the stomach and intestine of cattle, usually affecting young animals at 6-24 months. These animals become skinny and do not grow well. Poorly fed animals often have worms. They are thin both because they are inadequately fed and due to worms. They need better, higher quality feed and treatment for worms .**

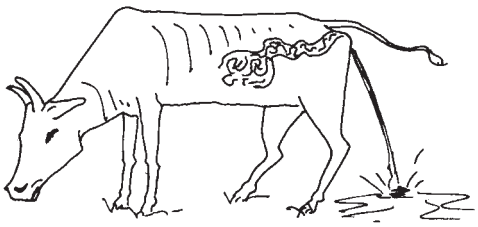
**This animal has a small number of worms and is in good condition.**



**This animal has a medium number of worms and is skinny.**

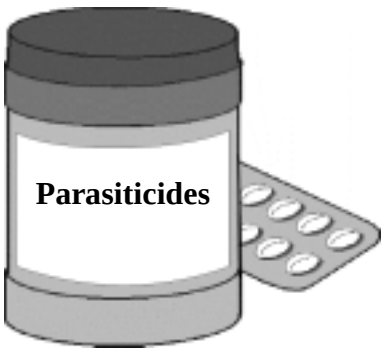


**Many worms, the animal is very skinny.**



| **Treatment:** Parasiticides should be used to kill the worms. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**
**Treating young cattle when they are 6 months and 12 months of age will prevent them suffering from high worm burdens.**



# Medicine use according to the label

| Affix label |
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| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.1.6. Large roundworm in calves

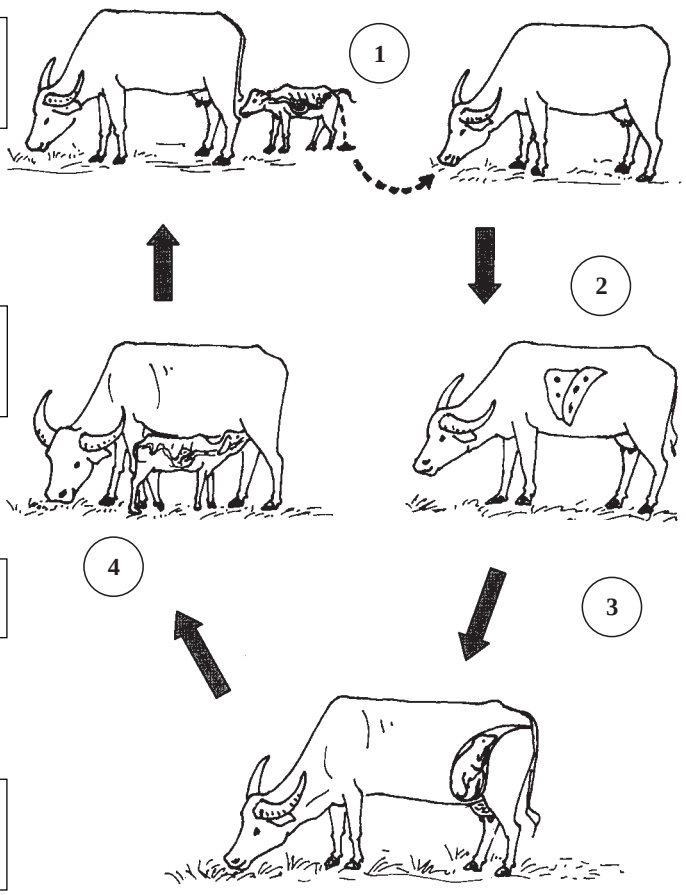
**The large white roundworm (*Toxocara vitulorum*) lives in the small intestine of young buffalo calves and, in some areas, also in cattle calves. It causes weight loss and makes the calves sick. If there are many of these worms in the small intestine then the young calf can die.**

**1. Adult worm in the intestine of a calf. Worm eggs in the faeces are ingested by other animals.**

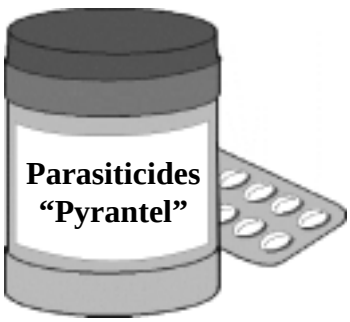
**2. Immature worms develop in the liver and lung. The adult animal does not show any symptoms.**

**3. Immature worms travel to the udder when the female is pregnant.**

**4. Immature worms pass to the calf in the milk and develop to adult worms in the intestine of the calf.**




| **Treatment:** Parasiticides should be used to kill the worms. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | **Pyrantel** | **Oral (drench), 250 mg to every calf when it is 14 days old.** |



# Medicine use according to the label

| Affix label |
| --- |
| **Calculation of dose per animal** |
| **Calculation of cost and profit** |
| **Directions for use** |

# 3.1.7. Liver fluke

**Fasciola is caused by a leaf-shaped worm that is approximately 2-3 cm long. It lives in the liver and can affect cattle or buffalo of all ages. The disease mostly occurs where lakes and ponds have particular snails to host and transmit the disease.**

**1. Mature Fasciola in the liver of an affected animal.**

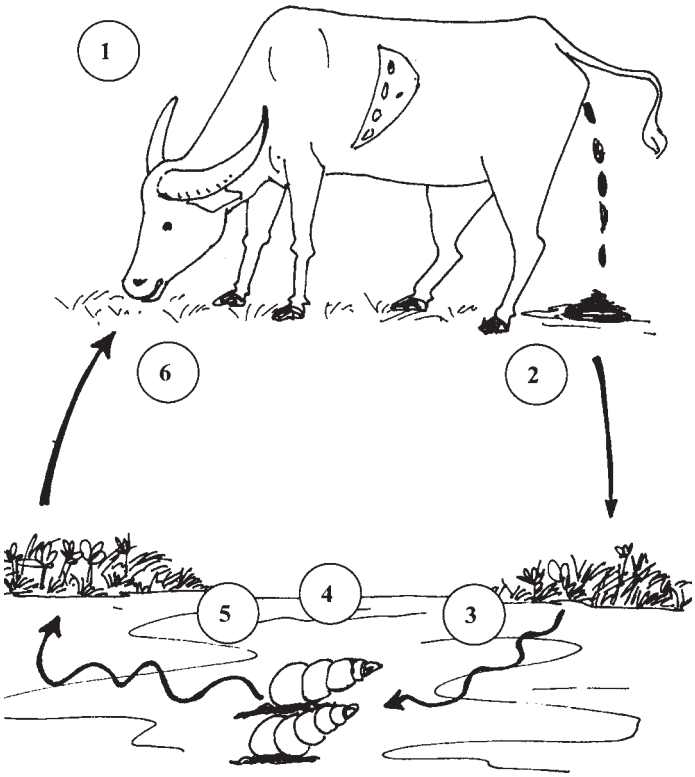
**2. Faeces containing eggs drop in or near water.**

**3. The eggs hatch and swim through the water to enter a snail.**

**4. Immature Facsiola live and multiply in the snail.**

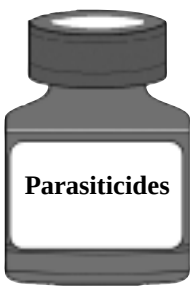
**5. Immature Fasciola leave the snail and stay on grass near the water.**

**6. Animals eat the grass with the immature Fasciola.**




| **Treatment:** Parasiticides should be used to kill the worms of sick animals. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Note:**
**Infection with liver fluke can be common, without clinical signs. Only when many worms are present in the liver will the animal become weak and lose weight. As liver fluke medicine is expensive, only these sick animals should be treated.**



# Medicine use according to the label

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|---|
| **Affix label** |
| **Calculation of dose per animal** |
| **Calculation of cost and profit** |
| **Directions for use** |

# 3.2. Pig diseases

## 3.2.1. Classical Swine Fever (Hog Cholera)

**Classical Swine Fever is caused by a virus. It occurs in outbreaks and can result in the death of many pigs. The virus is transmitted by sick animals and by meat from infected pigs. It may survive in the environment for a few days and can be destroyed by disinfectants.**

**1. The virus is transmitted from an infected to a non-infected pig.**

**2. An infected sow may abort or only a few piglets are born alive.**

**3. The virus enters and multiplies in the piglet.**

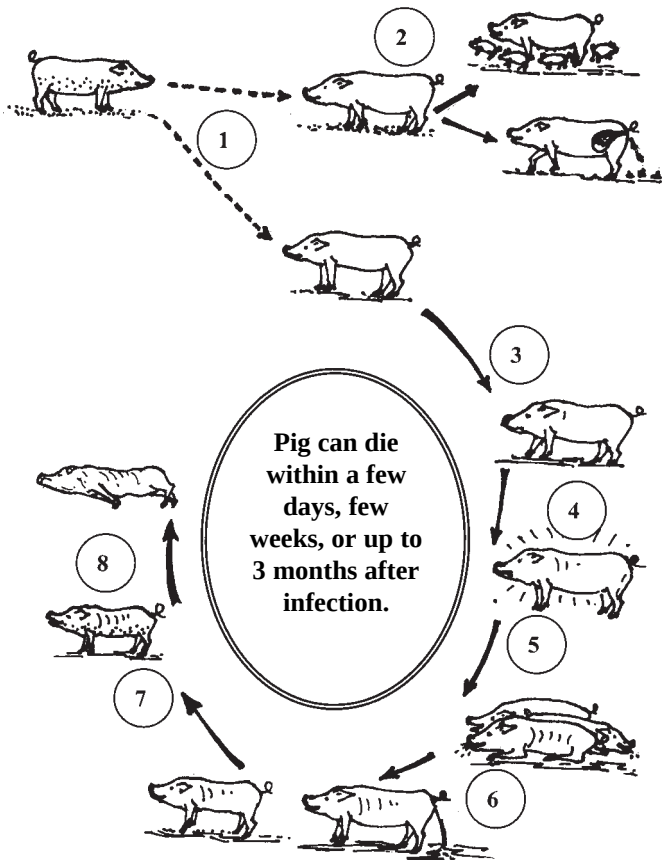
**4. The piglet has a fever and does not eat.**

**5. Piglets huddle together.**

**6. The pig has constipation and or diarrhoea.**

**7. The pig has red spots on the skin and it staggers.**

**8. Dead.**




**<u>Treatment:</u> There are no medicines which can kill the virus. Affected pigs will die.**

**<u>Prevention:</u>**

- **To prevent the disease, pigs should be vaccinated with Swine Fever vaccine.**
- **During an outbreak, dead pigs should be buried to reduce transmission of the virus and healthy pigs should be kept away from sick pigs.**
- **Do not transport sick pigs or meat from pigs that are suspected to have the virus.**

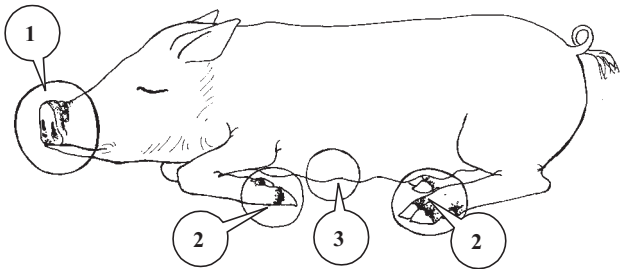
# Medicine use according to the label

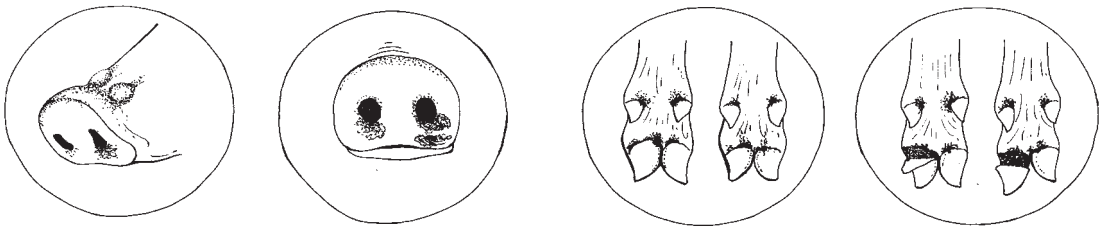
| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.2.2. Foot and Mouth Disease

**Foot and Mouth Disease is caused by a virus. Out-breaks of FMD occur in cattle, buffalo, pigs, sheep and goats. In pigs lesions develop on the feet, snout and mammary glands. The lesions are worse on the feet than on the snout. The walk is painful and pigs want to lie down. Sows may not allow piglets to suckle because of painful sores on and around the teats.**

**Pigs lie down, do not eat and have a high temperature.**

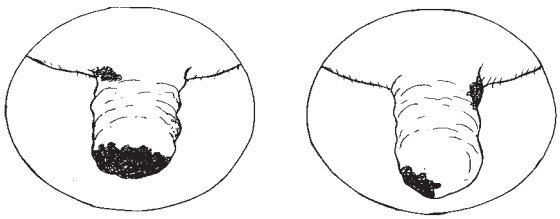


**1. At the snout small blisters develop into open wounds.**

**2. Blisters and wounds develop around and between the hooves. The hoof may fall off.**

**3. Blisters and wounds develop on the mammary glands and teats.**

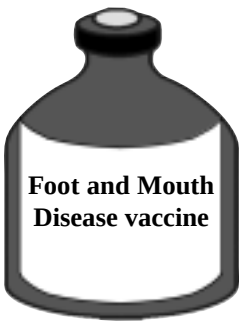


**Treatment:** **There are no medicines which can kill the virus.**

**Clean the blisters with medicines such as iodine. Antibiotics may be used as bacteria can enter the animal through the wounds, making the recovery time longer.**

**Prevention:**

- **Vaccination with FMD vaccine will prevent this disease.**
- **When there is a disease outbreak, animal movement should be stopped so that non-infected animals do not come into close contact with infected animals.**



# Medicine use according to the label

| Affix label |
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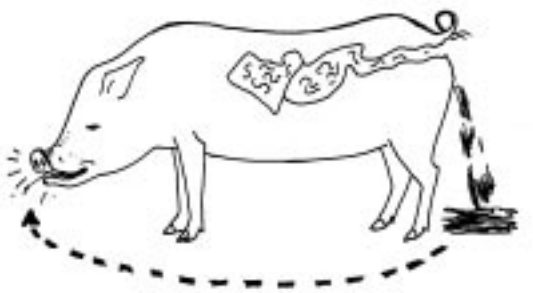
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.2.3. Roundworms

**There are many types of roundworms that can live in the stomach, intestine or lungs of pigs. They cause illness, weight loss and poor growth. The most important is a large white worm (*Ascaris suum*). This worm lives in the small intestine and mostly affects young pigs between 2-4 months of age.**

**Various types of worms can infect young pigs. The worms may live in the intestine, stomach or lung.**

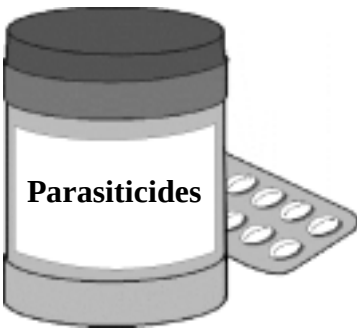


**Various types of worms can affect breeding sows, especially while suckling piglets. These worms usually live in the intestine or stomach.**

| **Treatment:** Parasiticides should be used to kill the worms. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Pigs raised in a clean pen can be treated for worms every 3 months.**
- **If not kept in a clean pen, pigs should be treated every 4 weeks.**
- **Newly procured pigs should be treated immediately on arrival.**
- **Pregnant sows should be dewormed 4 weeks before farrowing.**



# Medicine use according to the label

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|---|
| **Affix label** |
| **Calculation of dose per animal** |
| **Calculation of cost and profit** |
| **Directions for use** |

# 3.2.4. Diarrhoea in piglets

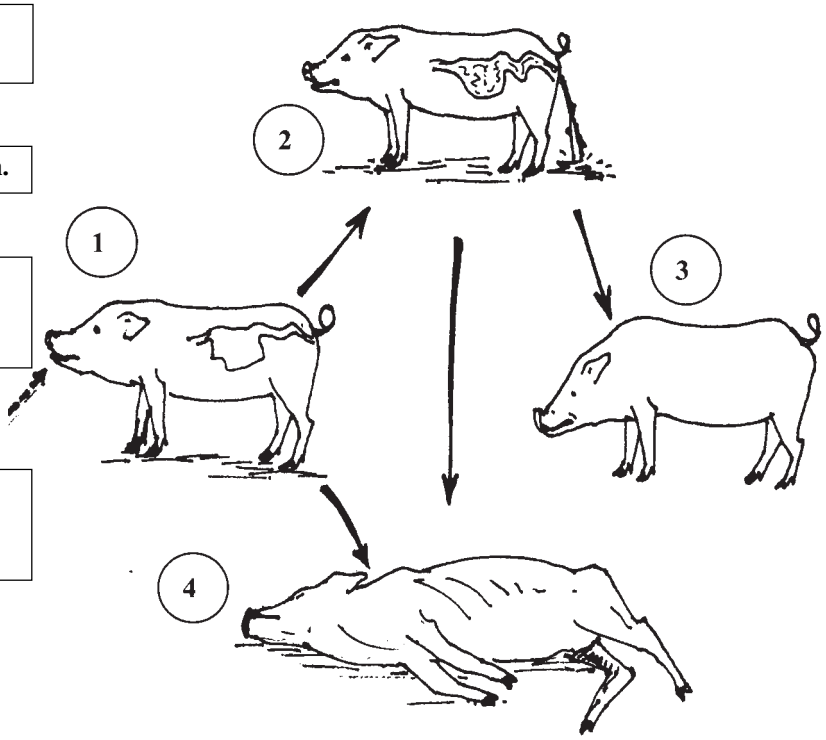
**This disease can be caused by many different microbes, both bacteria and viruses. These microbes can enter healthy pigs when they eat feed or water that is contaminated with faeces from affected pigs. The microbes go to live in the small or large intestine. Diarrhoea usually occurs in young pigs from the age of 1 week to 3-4 months.**

**1. Microbes are ingested by the piglet.**

**2. The piglet has diarrhoea.**

**3. The piglet may recover, but sometimes does not grow well.**

**4. The piglet may die suddenly without signs, or after diarrhoea.**




| **Treatment:** Prevent dehydration by giving fluids with a weak mixture of salt and sugar. Vitamins and antibiotics can also help to make the pig stronger. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Keeping pigs in a clean pen is important especially for sows with piglets.**
- **Sows with young piglets should be raised separately from other older, growing pigs.**
- **Healthy pigs should be kept away from sick pigs.**

**Nutrient medicines**

# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

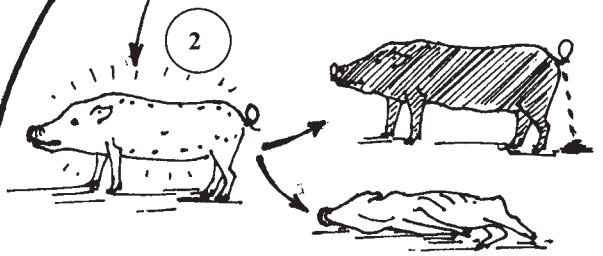
# 3.2.5. Erysipelas

**Erysipelas is an infectious disease caused by a bacteria that mainly affects young pigs (it can also affect humans). Pigs show signs of red diamond-shaped plaques on the skin; the spinal cord, joints and heart may be affected and it can kill the pig.**

**1. The pig is infected by a carrier pig. The pig may suddenly die with no signs.**


**Pig may survive and be a carrier**

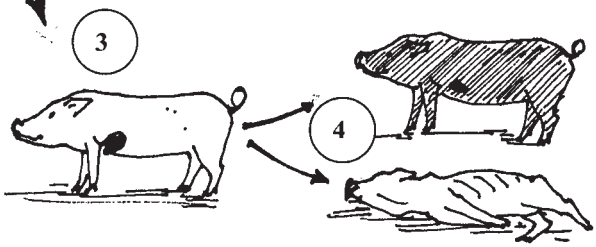
**2. The infected pig with high temperature and skin lesions.**




**3. Bacteria affect the skin, heart and joints. The pig is tired and does not want to walk.**

**Pig may die in 1-2 days**

**4. The pig may survive and become a carrier or die due to heart problems.**




| **Treatment:** Antibiotics should be used to treat this disease. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Pigs should be raised in a clean pen.**
- **During an outbreak, healthy pigs should be kept away from sick pigs.**

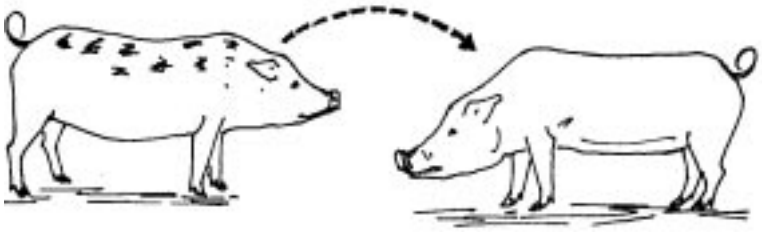
# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

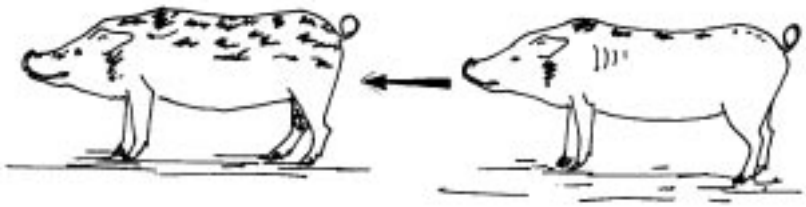
# 3.2.6. Mange

**This disease is caused by a mite that lives in the skin. It is very small and cannot be seen by the naked eye. The pig becomes irritated and scratches itself frequently. The affected skin becomes red, crusted and thick. The pig does not eat well and grows poorly.**

**Transmission occurs by close contact with affected pigs.**



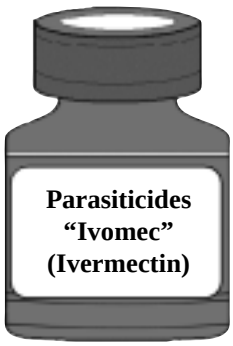
**Mites live in the skin around the eyes, ears, snout, legs and body. The pig scratches frequently and the affected skin is red, crusted and thick. The pig does not eat well and grows poorly.**



| **Treatment:** Parasiticides should be used to kill the mites. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | **Ivomec** | **Subcutaneous injection: 1 ml per 33 kg weight.** |
| **2** | | |

**Prevention:**

- **Affected pigs should be treated immediately and kept away from unaffected pigs.**
- **Pregnant sows should be treated 4 weeks before farrowing to prevent mange.**
- **Newly procured pigs should be treated immediately on arrival.**



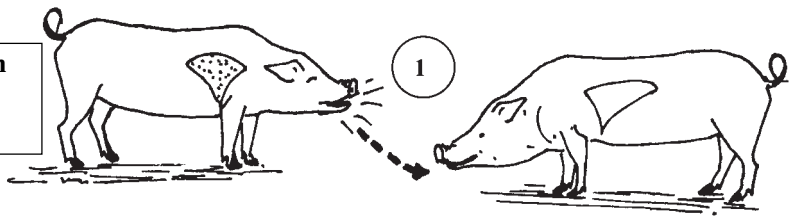
# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.2.7. Broncho-pneumonia

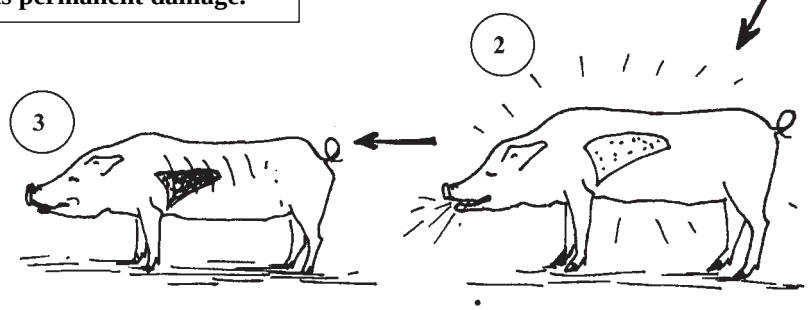
**There are many types of bacteria and viruses that may live in the lungs of pigs and reduce the lung function (broncho-pneumonia). If the pig is stressed, has worms or lives in a dirty, dusty pen, the microbes can easily enter the lung and cause problems.**

**1. Transmission from an infected pig to a non-infected pig.**




**2. The pig has a high temperature, nasal discharge, coughing and increased respiration rate.**

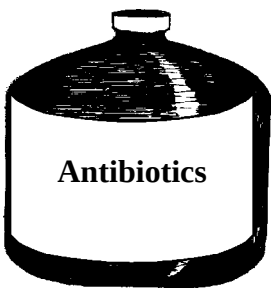
**3. The pig usually recovers but will not grow well if the lung has permanent damage.**




| **Treatment:** Early treatment with antibiotics is important to prevent damage to the lungs. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Parasite prevention in young pigs helps to reduce the incidence of broncho-pneumonia.**
- **Raise pigs in a clean, dust-free area with protection from the wind and cold and avoid overcrowding.**
- **Keep healthy pigs away from sick pigs.**



# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.2.8. Cysticercosis

**Cysticercosis is caused by a worm that lives in pigs. When humans eat pig meat that contains the worm, the worm grows into a large tapeworm. This tapeworm produces eggs that are passed in the faeces. When a pig eats human faeces, the eggs hatch to become worms that travel to the muscles where they form cysts. Humans get ill from these worms.**

**1. Adult tapeworms live in the human intestine and produce eggs.**

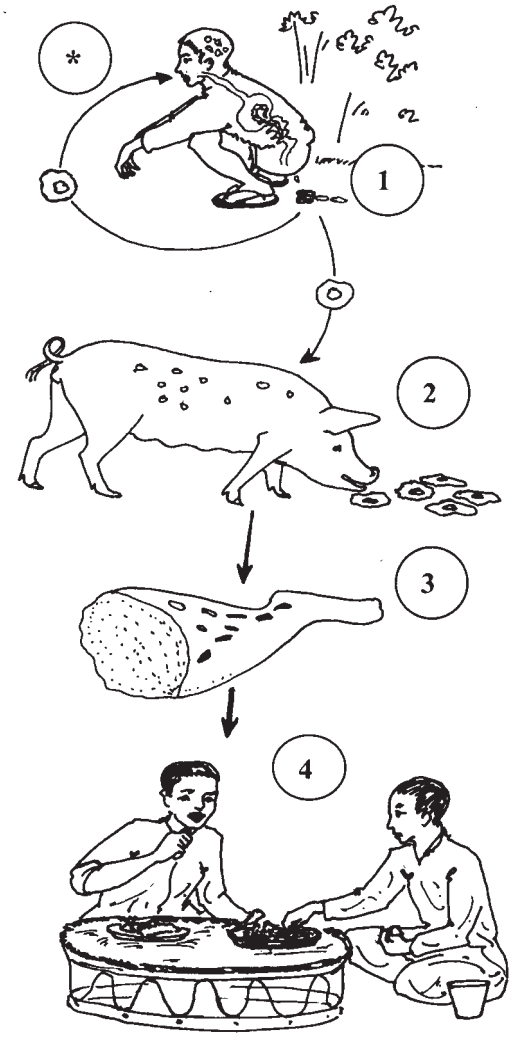
**2. The pig eats the tapeworm eggs in the human faeces.**

**3. Worms form cysts in the pig muscle.**

**4. When a person eats poorly-cooked meat with cysts, tapeworms can develop in the intestines.**

**Poorly cooked pork.**

*** Worm-eggs may be ingested directly from the faeces. Cysts may form in the brain and cause nervous disease.**




| |
|---|
| **<u>Treatment pigs:</u> There is no medicine to kill the worms and cysts in the pig muscles.** |
| **<u>Treatment humans:</u> Commonly available parasiticides for humans can kill the large tapeworm.** |

**<u>Prevention:</u>**

- **To prevent pigs having the small worms in their muscles, pigs must be kept away from human faeces. People should use latrines and pigs should be kept in pens.**
- **To prevent human ingestion of the worm via infected pig meat, the meat should be very well cooked before being eaten. Cooking over high heat will destroy the small worms.**

# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

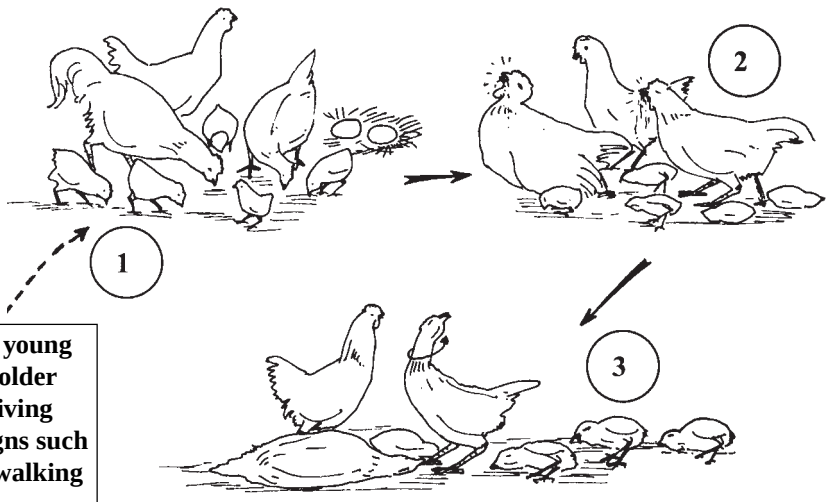
# 3.3. Poultry diseases

## 3.3.1. Newcastle Disease

**Newcastle Disease is the most important disease in chickens and is caused by a virus. This disease is highly infectious and occurs in outbreaks causing many chickens in the village to die, sometimes up to 80 or 90%. Prevention of this disease by vaccination is very important.**

**1. The virus enters a flock from an infected chicken.**

**2. The sick chickens show nervous signs and symptoms of nasal discharge and green diarrhoea.**



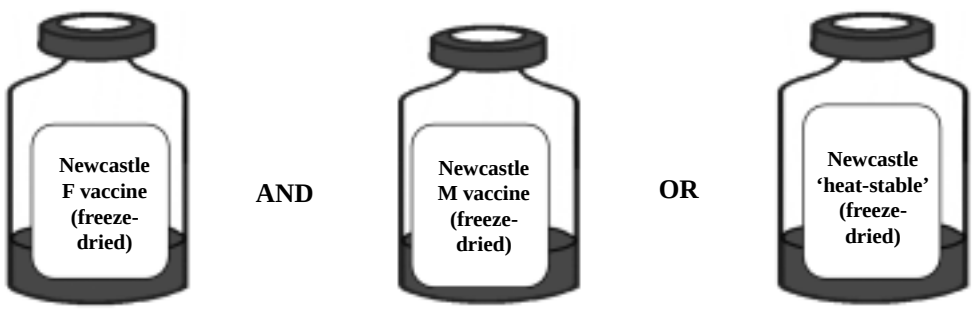

**3. Large numbers of young chickens and some older chickens die. Surviving chickens may show signs such as twisted necks and walking backwards.**

**Treatment: There is no treatment for this disease because it is caused by a virus.**

**Prevention:**

**Chickens should be kept in a pen and vaccinated regularly with Newcastle Disease vaccine. There are two methods of vaccination:**

- **Using a combination of F and M vaccines that give a long immunity.**
- **Using a "heat-stable" vaccine that is administered by eye-drops. The "heat stable" vaccine can be stored at room temperature for some days .**



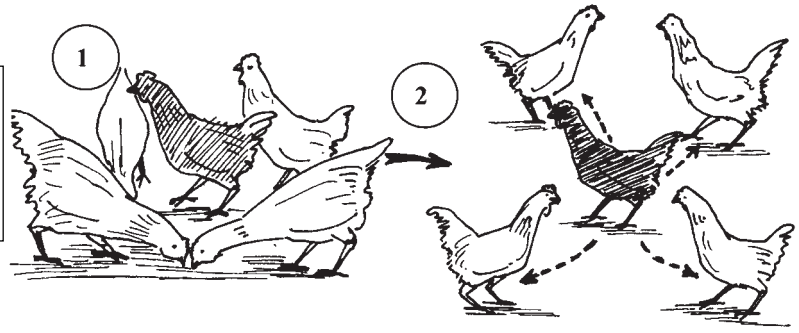
# Medicine use according to the label

| |
|---|
| **Affix label** |
| **Calculation of dose per animal** |
| **Calculation of cost and profit** |
| **Directions for use** |

# 3.3.2. Fowl Cholera

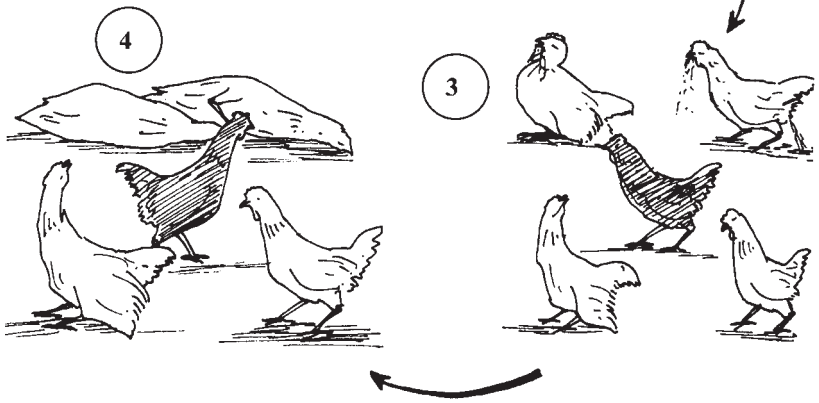
**Fowl Cholera is caused by bacteria that may infect both chickens and ducks. The bacteria may live in some chickens that do not show symptoms (carrier chickens). Under certain conditions the bacteria multiply and spread to other chickens that become sick and die.**

**1. Some chickens in the village have the bacteria in their intestine but do not show symptoms (carrier chickens).**




**2. The infection spreads from carrier chickens to other chickens.**

**3. Chickens show symptoms of lameness, nasal discharge, a swollen neck and black heads.**

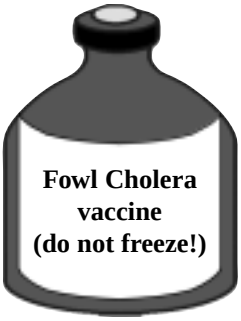



**4. Some chickens (mainly aged 4-6 months) will die.**

**<u>Treatment:</u> Antibiotics can be used to kill the bacteria. But treatment is expensive and often too late to stop the spread of the disease in the village.**

**<u>Prevention:</u>**

- **Vaccinate chickens regularly against Fowl Cholera.**
- **Keep chickens in a clean pen.**
- **During an outbreak keep sick chickens separate from healthy chickens.**



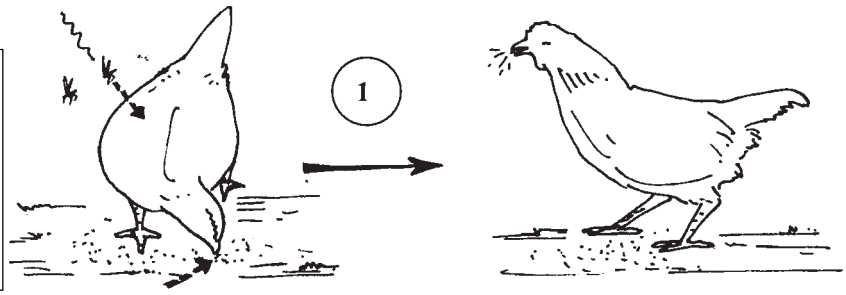
# Medicine use according to the label

| |
|---|
| **Affix label** |
| **Calculation of dose per animal** |
| **Calculation of cost and profit** |
| **Directions for use** |

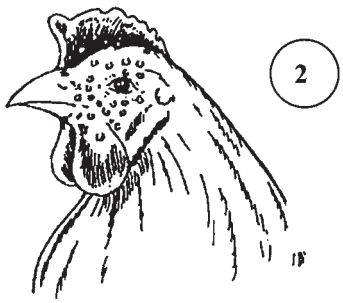
# 3.3.3. Fowl Pox

**Fowl pox is an infectious disease of chickens and is caused by a virus. It occurs in outbreaks and usually does not cause a high death rate, but will cause a serious loss in production. Chickens that do not die have a slower growth rate.**

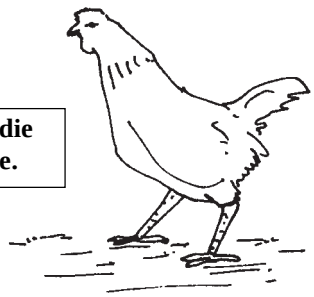
**1. A chicken is infected from the virus on the ground or from mosquitoes carrying the virus from another chicken.**




**2. Pox lesions may occur on the skin (Dry Form), or cause blisters on the mouth and throat (Wet Form).**




**3. Some chickens will die but many will survive.**




**<u>Treatment:</u> There is no effective treatment for this disease as it is caused by a virus.**

**<u>Prevention:</u>**

- **Vaccination is the best prevention.**
- **If an outbreak occurs, healthy chickens should be separated from sick chickens.**
- **Dead chickens should be buried.**

# Medicine use according to the label

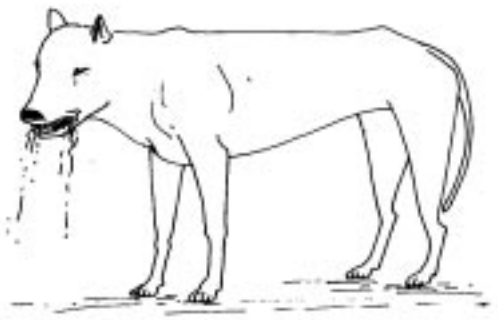
| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

# 3.4. Other diseases

## 3.4.1. Rabies

**Rabies is caused by a virus. This disease is transmitted from animal to animal (usually dogs) and to humans in the saliva of affected animals through a bite or cut. It is a disease of the nervous system that results in the death of the affected animal or human.**

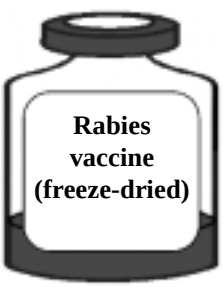
**A rabid dog changes its behaviour:**
- **from normal to aggressive and vicious (barking, salivating and biting), or**
- **from normal to quiet and timid.**



**A rabid dog must be killed. If it has bitten anybody, the victim must be taken to a hospital immediately for vaccination.**

**<u>Treatment:</u> There is no effective treatment for this disease. Rabid animals will die.**

**<u>Prevention:</u>**
- **Dogs need to be vaccinated regularly against Rabies.**
- **Suspected animals should be caged and observed over 10 days for signs of rabies. Notify Government officials.**
- **Do not touch the saliva of suspected animals.**
- **If a dog bites a human, the wound should be cleaned with soap and the person should be taken to hospital.**
- **Do not cut up or eat an animal that is suspected to have died from Rabies.**



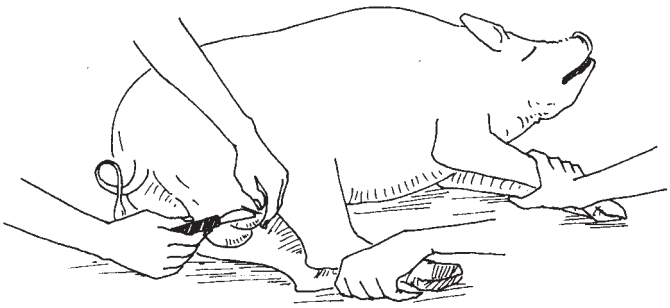
# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

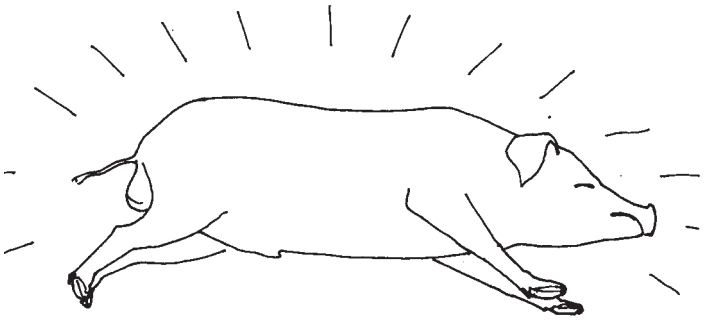
# 3.4.2. Tetanus

**Tetanus is caused by bacteria. The disease causes the muscles of animals and humans to become extremely stiff. Affected animals and humans can die.**

**The Tetanus bacteria can enter the body when the animal has been injured or has open wounds (e.g. at castration or through the navel of newborn animals).**



**The animal has stiff muscles, legs and back. It has a high temperature and most animals will lie down in a rigid position with their legs extended.**



| **Treatment:** Early treatment with antibiotics is important to prevent deaths. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Wash out deep wounds with antiseptic.**
- **Always perform operations in a clean area with sterile equipment.**

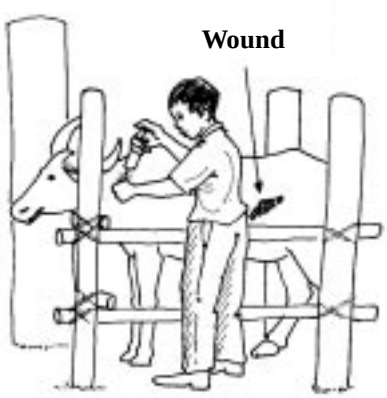
# Medicine use according to the label

| Affix label |
| --- |
| |
| **Calculation of dose per animal** |
| |
| **Calculation of cost and profit** |
| |
| **Directions for use** |
| |

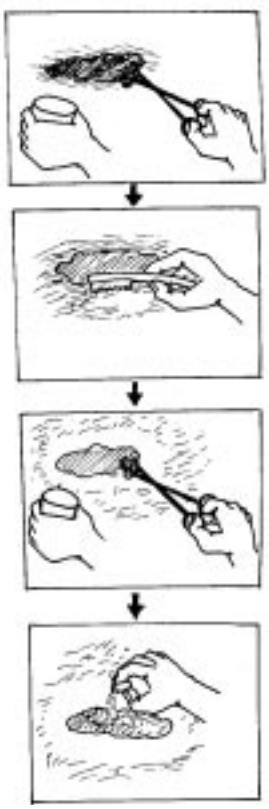
# 3.4.3. Infected wounds

**Injuries may occur due to horns, bites, thorns, glass, wire, nails, etc. These injuries can become infected when microbes enter the wound, particularly if the environment is not clean. The area around the wound becomes swollen and red and the animal can have an increased temperature. Infected wounds may produce pus and form an abscess.**

**Clean wounds with soap and water or an antiseptic and leave to dry. Apply iodine solution or antibiotic powder to kill microbes and flies. Pus from abscesses should be squeezed out daily.**




***Inject severely sick animals with antibiotics***



**Wash the wound with soap and water.**

**Shave hair from around the wound.**

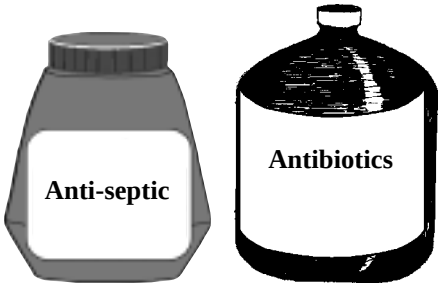
**Clean the wound with antiseptic, like Iodine.**

**Apply antibiotic powder (e.g. Penicillin).**

| **Treatment:** Injured, sick animals with high temperature should be treated with antibiotics. | | |
|---|---|---|
| | **Name of Medicine** | **Method, Dose and Schedule** |
| **1** | | |
| **2** | | |

**Prevention:**

- **Keep animals, pens and environment clean.**
- **Keep the wounded animal in a clean pen, free of flies.**
- **Clean the wound regularly to prevent infections.**



# NOTES

# Annex 1: The basic VVW kit

## Equipment in the VVW kit

| No | Item description / trade name | Qty | Price/each | Total value |
|---|---|---|---|---|
| 1 | **Instruments** | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | **Syringes and needles** | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | **Cool-box and ice-packs** | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | **Miscellaneous items** | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |

# Medicines in the VVW kit

| No | Item description / trade name | Qty | Price/each | Total value |
|---|---|---|---|---|
| 1 | **Antibiotics** | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | **Parasiticides (external)** | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | **Parasiticides (internal)** | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | **Parasiticides (ext. and int.)** | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | **Vitamins and minerals** | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | **Rehydration medicines** | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | **Antiseptics and disinfectants** | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |
| 33 | **Others** | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |

# Annex 2: Details of basic livestock vaccines

| | Vaccine | Producer | Age | Sub-stance | Injection and dose | Doses bottle | Immunity period | Storage in °C |
|---|---|---|---|---|---|---|---|---|
| Cattle and buffalo | Haemorrhagic Septicaemia | * NT-Laos | > 6 months | liquid | 3 cc SC | 30 or 15 | 6 months | 4 °C |
| | Haemorrhagic Septicaemia | ** | | | | | | |
| | Anthrax | ** | | | | | | |
| | Blackleg | ** | | | | | | |
| | Foot & Mouth Disease | ** | | | | | | |
| | | | | | | | | |
| Pig | Classical Swine Fever | * NT-Laos | > 2 months | freeze -dried | 1 cc IM | 10 | 6 months | - 20 to 4 °C |
| | Classical Swine Fever | ** | | | | | | |
| | Foot & Mouth Disease | ** | | | | | | |
| | | | | | | | | |
| Poultry | Fowl Cholera | * NT-Laos | > 6 weeks | liquid | 1 cc SC | 50 | 3 months | 4 °C |
| | Fowl Cholera | ** | | | | | | |
| | Newcastle F | * NT-Laos | 1 to 7 days | liquid | eye drop | 100 | 3 months | 4 °C |
| | Newcastle M | * NT-Laos | > 1.5 months | freeze -dried | 0.5 cc IM | 50 | 1 year | - 20 to 4 °C |
| | | | | | | | | |
| | Newcastle “heat stable” | Vietnam | > 1 day | freeze -dried | eye drop | 25 | 3 months | room-temp |
| | Infectious Bronchitis | * NT-Laos | 2 wks - 1 month | freeze -dried | eye drop | 50 | 6 months | - 20 to 4 °C |
| | Fowl Pox | * NT-Laos | < 6 weeks | freeze -dried | wing-web | 100 | 1 year | - 20 to 4 °C |
| | Duck plague | * NT-Laos | > 3 weeks | freeze -dried | 1 cc IM | 50 | 3 months | - 20 to 4 °C |
| | | | | | | | | |
| Others | Rabies | ** | | | | | | |
| | | | | | | | | |

* Source: NongTeng Vaccine Production Institute (2002)

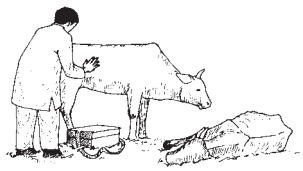
** Depending on the producer

# Annex 3: Basic diagnosis and use of medicines

## Basic diagnosis and use of medicines

**CATTLE AND BUFFALO DISEASES**

**(symptoms, medicines and prevention)**



***Fever and...***

Temperature on a medical thermometer of more than 39 degrees

< **Respiratory distress ➔ Give antibiotics by injection:**
- Penicillin + Streptomycin injection
- Oxytetracycline injection
- Tylosine injection
-

< **Diarrhoea ➔ Give antibiotics by injection:**
- Streptomycin + penicillin injection
- Tetracycline injection
-

***No fever***

Temperature lower than 39 degrees

< **Rough coat, diarrhoea or constipation ➔ Give parasiticides to kill internal parasites:**
- Young calves: Pyrantel tablets in drench
- Older calves: Pyrantel or Mebendazole tablets in drench
- Ivermectin injection
- Vitamin injection
-

***Others***

< **Skin problems, mange, ticks ➔ Apply parasiticides to kill external parasites:**
- Mix sulphur with old engine oil and cover affected regions, repeat daily.
- Wash with Neguvon
- Ivermectin injection
- Vitamin injection

< **Blisters in the mouth, feet or teats ➔ Apply antiseptics to kill bacteria:**
- Wash with water and soap. Put tincture of Iodine on the blisters with a clean swab of cotton wool. Burn the swabs after.

< **Wounds ➔ Clean and apply antiseptics to kill bacteria:**
- Wash with water and soap
- Dust with Negasunt

**Never give antibiotics by mouth to adult cattle and buffalo !!!!!**

***Prevention:***

**Vaccinate regularly:**

< **Vaccinate animals over 6 months old, every 6 months with Haemorrhagic Septicaemia vaccine.**

**Any animal found sick must be immediately isolated from the others.**

# NOTES

# Basic diagnosis and use of medicines

**PIG DISEASES**

**(symptoms, medicines and prevention)**

***Fever and ....***

Temperature on a medical thermometer of more than 39.5 degrees

< **Respiratory distress ➔ Give antibiotics by injection:**

- Penicillin + streptomycin injection
- Tylosine injection
- Tetracycline injection
-

< **Diarhoea ➔ Give antibiotics:**

- Sulphatrim in drench or in boli
- Tetracycline-HCL mixed in feed
- Tylosine injection
-

***No fever***

Temperature lower than 39.5

< **Diarrhoea, constipation, poor performance ➔ Give parasiticides to kill internal parasites:**

- Pyrantel mixed in feed
- Mebendazole in drench
- Ivermectin injection
- Combination vitamins and minerals mixed in feed
-

***Others***

< **Skin problems (mange) ➔ Apply parasiticides to kill external parasites:**

- Mix sulphur with old engine oil. Cover affected regions and repeat every day. Do not treat whole body; no more than ¼ of the body at one time.
- Wash with Neguvon
- Ivermectin injection

< **Wounds ➔ Clean and apply antiseptics to kill bacteria:**

- Wash with water and soap
- Dust with Negasunt

**Prevention:**

**Vaccinate regularly:**

< **Vaccinate all pigs over 2 months, every 6 months with Classical Swine Fever (Hog Cholera) vaccine.**

**Any animal found sick must be immediately isolated from the others.**

# NOTES

# Basic diagnosis and use of medicines

**POULTRY DISEASES**

**(symptoms, medicines and prevention)**

***Fever and No fever:***

The temperature of chickens is normally not taken because:

- it is not practical to do so
- the normal temperature is high (42°C) and is easily influenced by stress

< **Diarrhoea, respiratory distress ➔ Give antibiotics by mouth:**

- Tetracycline in drinking water or feed
- Enrofloxacin in drinking water or feed
- Trimethoprim + Sulpha in drinking water or feed
-

< **Diarrhoea with blood (coccidiosis) ➔ Give antibiotics by mouth:**

- Sulphadimidine mixed in drinking water or feed
- Amprolium in drinking water or feed
-

< **Diarrhoea, low production ➔ Give antibiotics and/or parasiticides by mouth:**

- Sulphadimidine mixed in drinking water or feed
- Mebendazole mixed in drinking water or feed
-

***Others***

< **External parasites (red mites etc) ➔ Apply parasiticides to kill external parasites:**

- Dust, spray or dip with Neguvon

< **Wounds**

- Dust with Negasunt. Apply antiseptics to kill bacteria.

**If chickens are kept in pens they need vitamin and mineral supplement in feed or water.**

***Prevention:***

**Vaccinate regularly:**

< **NcD:** **At 7 days old: NcD - "heat-stable" vaccine by eye-drop**
**Repeat every 3 months: NcD – "heat stable" vaccine**
**or**
**At 7 days old: NcD - F vaccine by eye-drop**
**At 2 months old: NcD-M vaccine by injection; repeat every year**

< **Fowl Cholera: all poultry over 1 month old, repeated every 3 months**

**Any animal found sick must be immediately isolated from the others.**

# NOTES

# Annex 4: Guidelines on medicine use

| | | | |
|---|---|---|---|
| **Name of disease** | | **Doses per bottle** | |
| **Medicine name** | | **Price per bottle/packet** | |
| **Size of bottle/packet** | | **Price per dose** | |

| **The dose depends on the weight of the animal** | | | | | |
|---|---|---|---|---|---|
| **Animal (body weight kg and dose)** | | **Light** | **ml or bottle** | **Heavy** | **ml or bottle** |
|  | **Mature: cattle - buffalo** | **250** | | **500** | |
| | **Calf: cattle – buffalo** | **20** | | **30** | |
|  | **Mature pig: native – white** | **60** | | **120** | |
| | **Weaner pig: native – white** | **5** | | **10** | |
|  | **Mature chicken: light-heavy** | **3** | | **4** | |
| | | **1** | | **2** | |

| **Calculating cost and profit; example animal weight is ..... kg** | | | |
|---|---|---|---|
| **Day** | **Dose per animal** | **Medicine cost** | **Farmer pays** |
| **Day 1** | | | |
| **Day 2** | | | |
| **Day 3** | | | |
| **Total** | | | |

| **Directions for use** | |
|---|---|
| **Ways to administer:** | Injection (im/iv/sc), drench, eye drops, mixed in feed or water |
| **Equipment to use:** | Type/size syringe, type/size of needle, drench bottle, eye dropper |
| **Dilution (if required):** | Diluting with sterile water, mixing with water, mixing with feed |
| **No. treated animals:** | No. bottle/packets required, medicine cost, farmer pays |
| **Storage:** | Cool & dark, in fridge at 4 – 8 $^{o}$C, in freezer at minus 20 $^{o}$C |
| **Other specifics:** | Minimum age animal, duration of treatment, repeat every .... months |

| **Useful needle sizes** | **Intramuscular (IM) – in the muscles** | | **Subcutaneous (SC) - under the skin** | |
|---|---|---|---|---|
| | **gauge** | **length** | **gauge** | **length** |
| **Cattle & buffalo** | 16 (thick) | 4-5 cm | 16-18 | 2-3 cm |
| **Pigs** | 18 | 2-3 cm | 18 | 2 |
| **Poultry** | 20 (thin) | 2 cm | 20 | 1 |

| **Healthy animals** | **Temperature $^{o}$Celcius** | | **Heartbeats per minute** | **Breaths per minute** |
|---|---|---|---|---|
| | **minimum** | **maximum** | | |
| **Cattle & buffalo** | 37.5 | 39.5 | 55 | 12 |
| **Pigs** | 38.0 | 40.5 | 85 | 15 |
| **Poultry** | 40.5 | 43.0 | 280 | 25 |

| **Measurements** | **Water (ml)** | **Salt (g)** |
|---|---|---|
| **one tea spoon (flat)** | **2.5** | **2.5** |
| **one soup spoon (flat)** | **10** | **10** |
| | One ml is about 20 small drops of water | One gram of salt is a pinch of salt |

1 ไก่ผู้ลาดที่ดี Good local cock

2 ไก่ผู้ลาดขี้ร้าย Bad local cock

3 ไก่แม่ลาดที่ดี Good local hen

4 ไก่แม่ลาดขี้ร้าย Bad local hen

5 ไก่ตี Fighting cock

6 ไก่เหลืองๆ Yellow Chicken

7 ไก่กาเบัย (บิหิ 2) Kabia chicken (BT2)

8 ไก่ไข่พันโบแอม Bovan layer chicken

1 ຫມູຜູ້ລາດທີ່ດີ Good local boar

2 ຫມູຜູ້ລາດຂີ້ຮ້າຍ Bad local boar

3 ຫມູແມ່ລາດທີ່ດີ Good local sow

4 ຫມູແມ່ລາດຂີ້ຮ້າຍ Bad local sow

5 ຫມູແມ່ລາວສູງ Lao Sung sow

6 ຫມູພັນຊິນຢີ ຂອງ ຈີນ Singyi boar (China)

7 ຫມູພໍ່ພັນດູຣອກ Duroc boar

8 ຫມູແມ່ພັນແລນເດຣັສ Landrace sow

# 3. ຄອກ ຫລື ລົ້ມໄກ່

## 1 ລົ້ມໄກ່ຢູ່ພື້ນດິນ Chicken pen on the soil

## 2 ລົ້ມໄກ່ຍົກພື້ນ Chicken pen with slatted floor

## 3 ລົ້ມໄກ່ແບບຮ້ານ Slatted floor

## 4 ຄອກໄກ່ທີ່ມີຄອນຈັບ Cage with perches

## 5 ອະນາໄມຄອກໄກ່ Cleaning of chicken pen

## 6 ປ້ອງກັນໄກ່ນ້ອຍ Protection of chicks

## 7 ຄອກໄກ່ ເພື່ອ ການຄ້າ Commercial poultry house

## 8 ຄອກໄກ່ ເພື່ອ ການຄ້າ Commercial poultry house

1 ຄອກຫມູຍົກພື້ນ Pig pen with slatted floor

2 ອະນາໄມຄອກຫມູ Cleaning of pig pen

3 ຄອກຫມູຊູພື້ນດິນ Pig pen on the soil

4 ຄອກຫມູເທິງຫນອງປາ Pig pen above fish pond

5 ຄອກຫມູພື້ນໄມ້ Pig pen with wooden floor

6 ຄອກຫມູພື້ນຊີມັງ Pig pen with cement floor

7 ຄອກຫມູແມ່ລ້ຽງລູກທັນສໄມ Modern 'farrow' pen

8 ຄອກຫມູແມ່ລ້ຽງລູກ Local 'farrow' pen

1 ການໃຫ້ອາຫານເພີ້ມ Supplement feeding

2 ຮາງອາຫານ ແລະ ຮາງນ້ຳ ຕີນລິດ Tire feeder & drinker

3 ຮາງອາຫານໄມ້ Wooden feeder

4 ຮາງອາຫານຊີມັ້ງ Cement feeder

5 ກອກນ້ຳແນວດູດ ຂອງ ຫມູ Pig drinker

6 ຫມູ ກຳລັງດື່ມນ້ຳ Pig drinking

7 ຮາງອາຫານແລະເຕົ້ານ້ຳໄກ່ Chicken feeder & drinker

8 ໄກ່ ກຳລັງກິນອາຫານ Chickens eating

# 6. ອາຫານ: ທີ່ໃຫ້ ພະລັງງານ

## 1 ຮຳ Rice bran

## 2 ເຂົ້າປຸ່ນ Broken rice

## 3 ຕົ້ນສາລີ Maize crop

## 4 ແກ່ນສາລີ Maize grain

## 5 ຫົວມັນຕ່າງໆ Tubers

## 6 ເຫຍື້ອຫມາກພ້າວ Coconut

## 7 ຫຍ້າ ສຳລັບສັດຄ້ຽວເອື້ອງ Grass for ruminants

## 8 ຫົວອາຫານ Commercial feed

1 ຂີ້ກະເດືອນ ແລະ ແມງໄມ້ຕ່າງໆ Worms & insects

2 ປວກ Termites

3 ໃບກະຖິນ Leucaena

4 ຖົ່ວແຮ Pigeon pea

5 ຖົ່ວ Cow pea

6 ຖົ່ວຂຽວ Mung bean

7 ຖົ່ວເຫລືອງ Soya seed

8 ຫົວອາຫານ Commercial feed

## 8. ອາຫານ: ຈຳພວກວິຕາມິນ ແລະ ແຮ່ທາດ

**Nutrition : Vitamins & minerals**

1 ວິຕາມິນ ຢູ່ໃນໃບໄມ້ Vitamins in leaves

2 ວິຕາມິນ ຢູ່ໃນຜັກ Vitamins in vegetables

3 ແຮ່ທາດຢູ່ໃນເກືອປະສົມໄອໂອດ Minerals in iodised salt

4 ວິຕາມິນ-ແຮ່ທາດທີ່ມີຂາຍ Commercial vitamins, minerals

## 9. ອາຫານ: ການປຸງແຕ່ງຫົວມັນ

**Nutrition : Tuber processing**

1 ນຳຫົວມັນມາປອກເປືອກ Tuber peeling

2 ນຳຫົວມັນໄປລ້າງນ້ຳ Tuber washing

3 ນຳຫົວມັນມາຊອຍບາງໆ Tuber slicing

4 ນຳ ຫົວມັນມາຕາກແດດ Tuber drying

## 10. ການກວດກາພະຍາດ ແລະ ປິ່ນປົວ ງົວ-ຄວາຍ

**Health examination of cattle**

1 ກວດເບິ່ງອາຈົມສັດ Check manure

2 ກວດເບິ່ງກະເພາະສັດ Rumen functioning

3 ກວດເບິ່ງຕາສັດ Check eye mucus

4 ແຫກອຸນຫະພູມສັດ Check body temperature

## 11. ການນຳໃຊ້ ຈຸດດ່ານກວດກາສັດ

**Use of quarantine**

1 ຊື້ໄກ່ຈາກຕະຫລາດ Buy chicken from market

2 ຢຸດ, ຫ້າມນຳເຂົ້າໃນບ້ານ Stop, no entry to village

3 ກ່ອນອື່ນ ຕ້ອງຂັງ ເພື່ອຕິດຕາມ Observe first in quarantine

4 ຫລັງ 14 ວັນ ຈຶ່ງນຳເຂົ້າບ້ານໄດ້ Enter village after 14 days

1 ຂ້າເຊື້ອບ່ອນຈະຕອນ Disinfect

2 ໃຊ້ມີດປາດ Cut

3 ເອົາໜ່ອອກ Remove

4 ຂ້າເຊື້ອ Disinfect

5 ການຕອນງົວ-ຄວາຍ Castration of cattle/buffalo

6 ຂ້າແມ່ທ້ອງງົວ-ຄວາຍນ້ອຍ Deworming of calf

7 ສັກຢາ ໄອໂວເມັກ ໃຫ້ໝູ Ivomec injection pig

1 ດ້ວຍການຖັກເມ້ົາ Use of halter

2 ຖັກເມ້ົາ ແລະ ບ້ວງດັງ Use of halter & nose grip

3 ໃຊ້ຫລັກຫນີບ Use of bleeding pole

4 ໃຊ້ຄອກແຄບ Use of cattle crush

5 ສັດຄຸ້ນ Quiet animal

6 ສັກຫລືບຫນັງ Subcutaneous injection

7 ສັກກ້າມຊີ້ນທາງຫນ້າ Intra-muscular injection front

8 ສັກກ້າມຊີ້ນທາງຫລັງ Intra-muscular injection back

# 14. ການສັກຢາປ້ອງກັນ ແລະ ປິ່ນປົວໄກ່ ແລະ ຫມູ

**Vaccination and treatment of chickens and pigs**

1 ດ້ວຍການຢອດຕາ Vaccination by eye-drops

2 ສັກເຂົ້າກ້າມຊີ້ນ Intra-muscular injection

3 ສັກໃຕ້ຫນັງ Subcutaneous injection

4 ປະສົມຢາໃນນ້ຳດື່ມ Medicine in drinking water

5 ສັກຢາຫມູທີ່ຄຸ້ນ Injection of quiet pig

6 ສັກຢາຫມູທີ່ແຫ ແລະ ຮ້າຍ injection of stressed pig

7 ສັກກ້າມຊີ້ນຫມູນ້ອຍ Intra-muscular injection piglet

8 ຂ້າເຊື້ອສາຍປີຫມູນ້ອຍ Piglet disinfection of navel

## 15. ການທຳຄວາມສະອາດເຄື່ອງມື

**Cleaning veterinary equipment**

1 ດ້ວຍການລ້າງ Wash

2 ນຳເຄື່ອງມືໄປຕົ້ມ Put in boiling water

3 ອະເຊື້ອ (ຂ້າເຊື້ອ) Sterilize

4 ການຈັດການເຂັມທີ່ໃຊ້ແລ້ວ Disposal of needles

## 16. ການເອົາຕົວຢ່າງເລືອດ

**Taking blood samples**

1 ເອົາຕົວຢ່າງເລືອດໄກ່ Blood sampling, chicken

2 ເອົາຕົວຢ່າງເລືອດງົວ Blood sampling, cattle

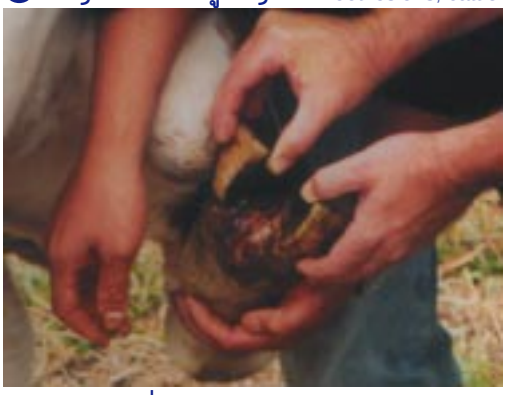
3 ເກັບເລືອດເຂົ້າຫລອດແກ້ວ Blood transfer into tube

4 ບັນທຶກໄວ້ Recording

## 17. ພະຍາດປາກເປື່ອຍ-ລີ້ງເລັບ

**Foot and Mouth Disease (FMD)**

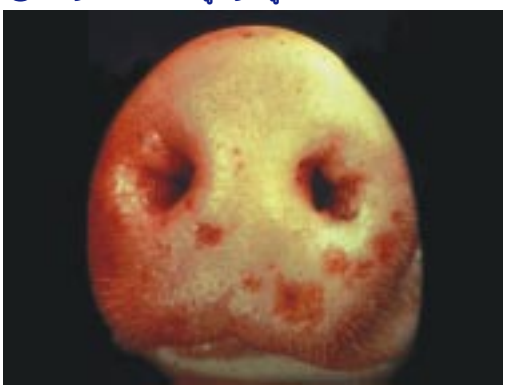
1 ຮ່ອງຮອຍທີ່ເກີດຢູ່ຕີນງົວ Foot lesions, cattle



2 ຮ່ອງຮອຍທີ່ເກີດຢູ່ປາກງົວ Mouth lesions, buffalo

3 ຮ່ອງຮອຍທີ່ເກີດຢູ່ຕີນຫມູ Feet lesions, pig

4 ຮ່ອງຮອຍທີ່ເກີດຢູ່ດັ້ງຫມູ Snount lesions, pig



## 18. ພະຍາດອື່ນໆທີ່ຄວນເອົາໃຈໃສ່

**Other notifiable diseases**

1 ເຕົ້າໂຮມເລືອດງົວ-ຄວາຍ Haemorrhagic Septicaemia

2 ພະຍາດອະຫິວາຫມູ Hog Cholera (Swine Fever)

3 ພະຍາດນິວຄາເຊິ່ນໄກ່ Newcastle Disease

4 ພະຍາດອະຫິວາສັດປີກ Fowl Cholera

# NOTES

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