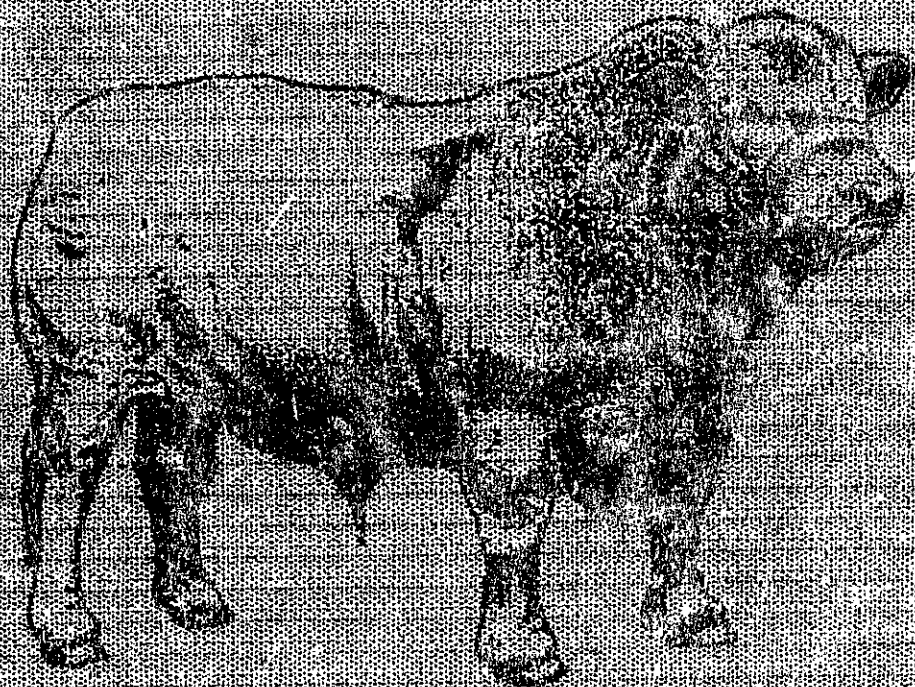


# CATTLE

## AGRICULTURE IN VANUATU



TEACHER'S NOTES

UNIT 6



ISSUED: 01-03-10

Private property  
of Mrs Ephraim



# Cattle

## AGRICULTURE IN VANUATU

### TEACHER'S NOTES

### UNIT 6

Written by : FREDERIC TAMATA

Illustrated by : PAUL DICK

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by SUN PRODUCTION for



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## ACKNOWLEDGMENTS

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## FOREWORD

This guide contains the major notes about cattle unit. It is based on Agriculture syllabus (May 1987 Revision) for secondary schools in Vanuatu.

The guide tries to avoid the mistake of covering too much. So it is advisable to treat it as a text which should be supplemented with other teaching aids printed, audio-visuals or field trips...

Teachers should note that they could do some of the areas practically, such as :

- Fencing
- Planting pasture
- Castration
- Dehorning,

if of course, resources are available.

In the schools which are planning to introduce cattle in their areas, teachers should know that they must prepare the land (i.e. pasture establishment, fencing, paddock constructions...) at least a year in advance.

It is also recommended to teach this unit in the 9th year as students already have broad knowledge about Agriculture.

## CATTLE

COMMON NAME : Cattle  
FAMILY : Bovidae  
GENUS : Bos  
SPECIES (studied) : Taurus and Indicus  
ORIGIN : Asia

### I. INTRODUCTION

Cattle raising is a major asset in the present day world. It was introduced in Vanuatu by the European settlers some centuries ago.

#### 1. WHY KEEPING CATTLE ?

People keep cattles for several reasons : cattle would provide people with

- beef
- milk
- hide
- veal
- grazing under coconuts

It also makes use of uncultivated land.

#### OTHER SUB-PRODUCTS :

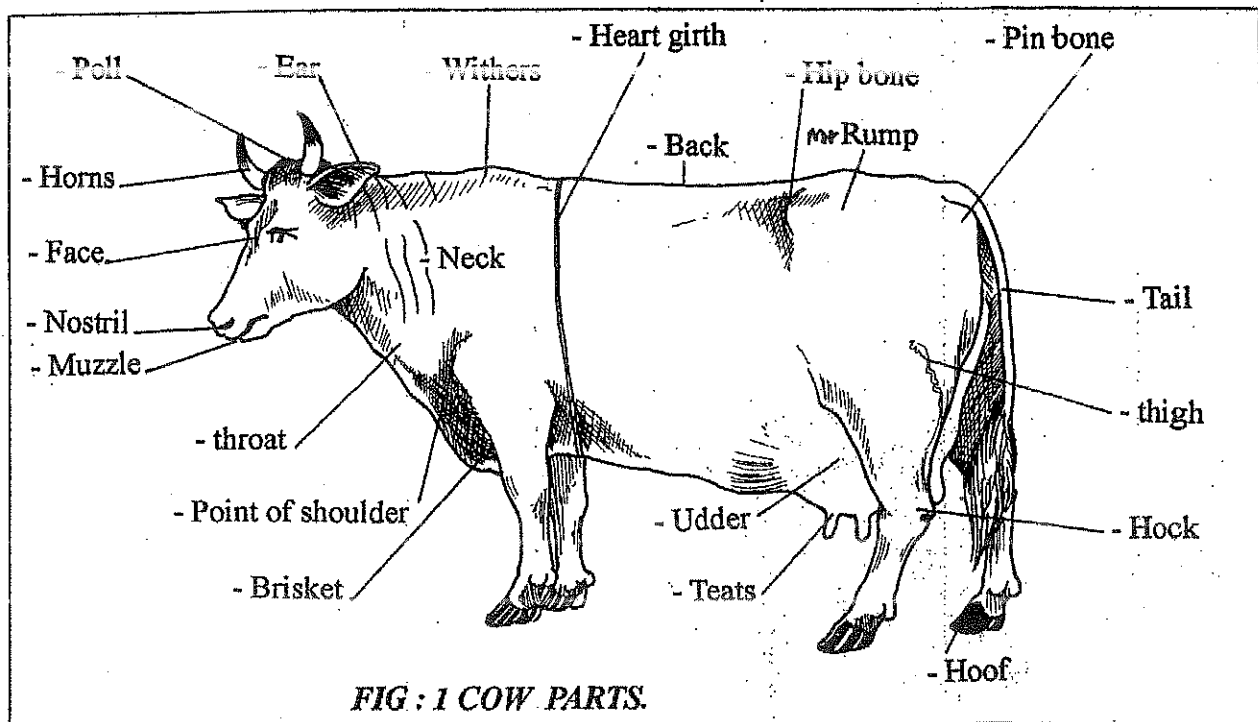
- butter, bone meal
- cheese, protein concentrates ...

#### 2. WHO RAISE CATTLE IN VANUATU ?

- a. Small Holders : Small holders is the sector of farmers who own not more than 50 ha of land. They may grow coconuts or raise cattle on their land.
- b. Plantation Owners : This sector refers to farmers who exploit more than 50 ha of land. Their activities may involve - cattle husbandry, copra production, cocoa production.

## II. ANATOMY :

### 1.1 PARTS



### 1.2 DIFFERENT NAMES GIVEN TO CATTLE

There are different names given to cattle according to their age, size, sex.

- Bull : mature male over 2 years
- Cow : mature female after 1st calving
- Bullock : castrated male under 3 years
- Steer : castrated male under 3 years
- Heifer : young female before 1st calving
- Calf : name given to very young animal
- Bullcalf : young male up to weaning
- Dairy cow : female animal kept for milking purpose.

### III. ANIMAL PHYSIOLOGY

To see how the body of the animals work. The study of the following systems are essential :

- the Digestive System
- the Reproductive System

#### 1. DIGESTIVE SYSTEM

##### 1.1 PARTS

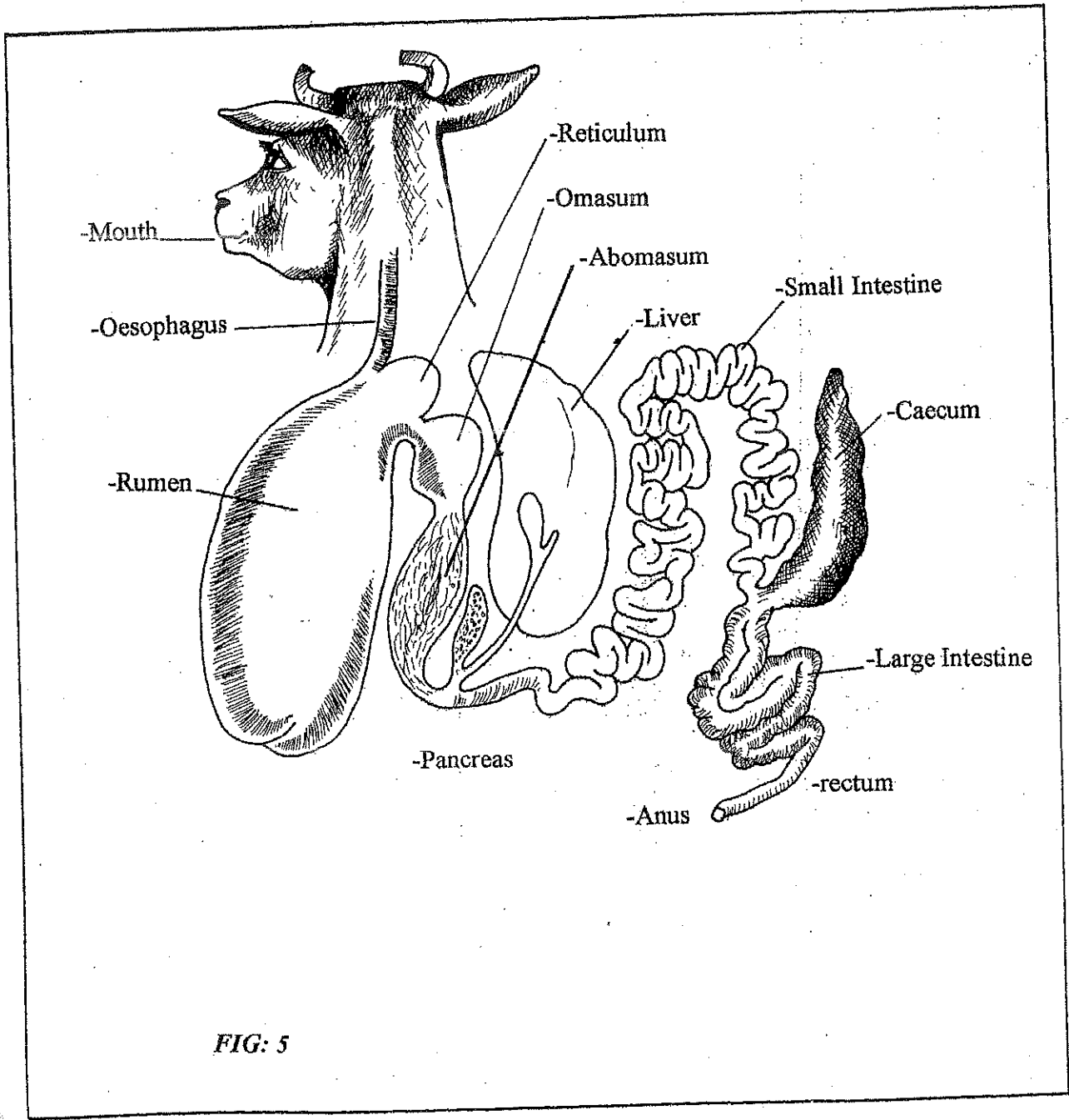


FIG: 5



## 1.2 FUNCTIONS OF PARTS OF DIGESTIVE SYSTEM

Cattle is a ruminant, that is it chews its food twice. Therefore its physiology of digestion is very different from that of man. Figure 2 shows the digestive tract of cattle.

The alimentary tract starts from the mouth to the anus. The major parts of the digestive system are mentioned below with their particular functions.

**MOUTH :** it chews the food and also secretes the saliva to soften it. The food is then pushed down to the oesophagus.

**OESOPHAGUS :** it carries the food down to the stomach.

**STOMACH :** this is a site of chewing, storing and grinding of food. It also controls the transit of food. The ruminants have 4 different stomach.

**RUMEN :** this is the biggest sac of the 4 stomach. It is a zone of storage, absorption and of huge churning actions. The food is digested by active action of millions of microbes.

**THE RETICULUM :** it sorts out between the big particles which return in the rumen and cause rumination and small particles which pass directly to the omasum.

**RUMINATION :** when a cattle has finished filling the rumen it often lies down quietly under the shade of trees (see here the importance of providing shade in the paddocks). The undigested grass or cud passes from the rumen to the reticulum from where it re-enters the oesophagus and finally gets back to the mouth. The cow will chew the cud and when the food is sufficiently broken down, it is swallowed. This time the food goes directly in the OMASUM.

**OMASUM :** it is a site of concentration of dry matter and water absorption. The water will be used to convey the food through other parts.

**ABOMASUM :** this is the fourth stomach. It secretes gastric juice to digest the food in order to be absorbed in the small intestine.

**INTESTINES :** it consists of two parts. The small intestine and large intestine.

**SMALL INTESTINE :** this is a zone of absorption of nutrients. This is also the place where most of the important digestive juices are secreted to break down the food into nutrients (pancreatic juice, intestinal juice and bile juice).

**LARGE INTESTINE :** this part does the preparation of wastes and reabsorption of water.

**CAECUM** : this sack is responsible for a fermentation of non-digestible parts of the food caused by a microbe population.

**RECTUM/ANUS** : they are the terminal parts of digestive track. They serve as passage way of wastes or excrements to the outside.

## ANNEXE GLANDS

- pancreas
- bile

## 2. REPRODUCTIVE SYSTEM

### 2.1 PARTS

FIG : 6 Reproductive Organs of bull

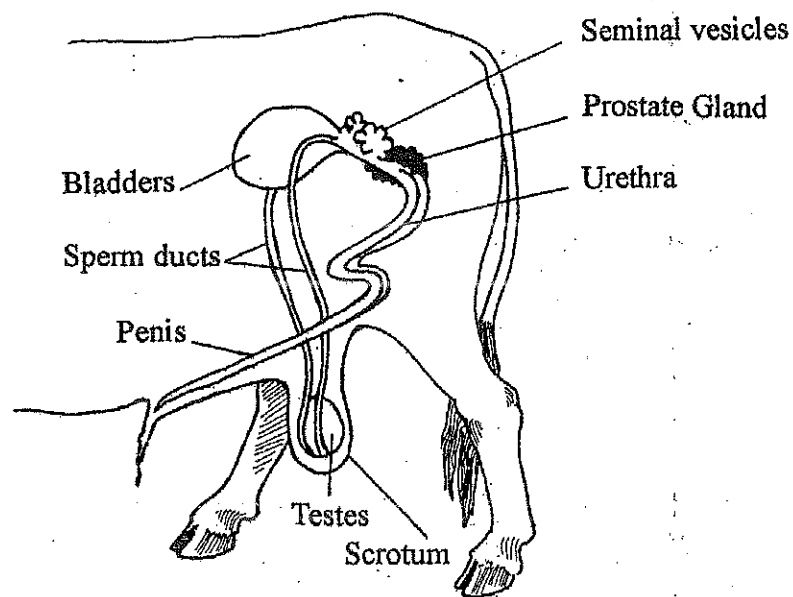
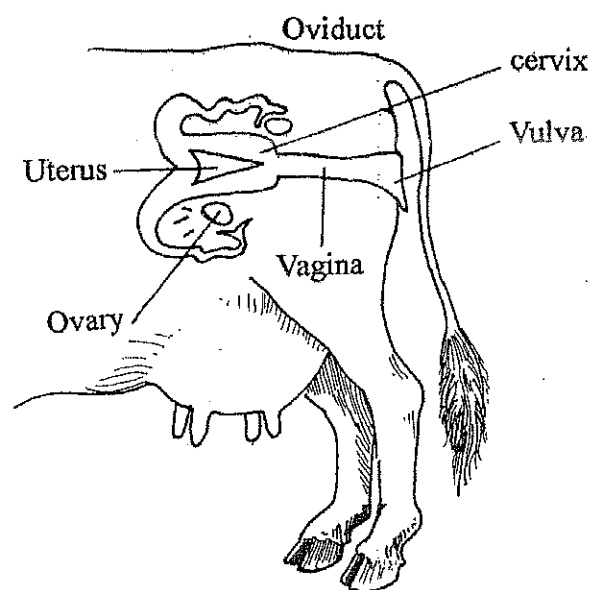


FIG : 7 Reproductive Organs of cow



## 2.2 FUNCTIONS OF PARTS OF REPRODUCTIVE SYSTEM

This system enables the animals to reproduce. The male reproductive organs will be first studied, followed by the female one.

- (a) Male Reproductive Organs : The male reproductive organ consists of a pair of testes, a penis, sperm ducts, seminal vesicles and urethra. 2 testes of testicles, where the spermatozoa are formed. The spermatozoa are then stored in an organ attached to the testes, the epididymis. The sperm travels down the sperm ducts. The sperm ducts join with the urethra. In the area of junction between those 2 (ducts) canals, there are two sets of glands, the seminal vesicles and the prostrate glands, which are responsible for secretion of fluid substances that enhance the mobility of the spermatozoa.

Below the prostrate gland there is also another gland that secretes a fluid which precedes the semen in order to clean the urethra.

This urethra is the common passage way of both the semen and urine. It ends with penis which is the male sex organ. The sac which contains the testes is called the scrotum. When the sperm is mixed with the seminal fluids, it is called the semen.

- (b) Female Reproductive Organs : The female reproductive organs also consists of : (pair of ovaries, fallopian tubes, uterus, vagina, vulva).

- 2 ovaries : where ova are formed and developed.
- 2 fallopian tubes : they are the site of fertilization of the ovum. They have a function of receiving the ovum during ovulation.
- Uterus : also called CALF BED
  - it is the fundamental organ of gestation.
  - this is an area of exchange MOTHER - FOETUS.
  - it permits the expulsion of the foetus at the end of gestation or during parturition.
  - Cervix : normally closed but opened during ovulation.
  - Vagina : this is the female sex organ. This is where semen are deposited during mating.
  - External Organ : vulva.

### 1.3 ANIMAL'S CONFORMATION

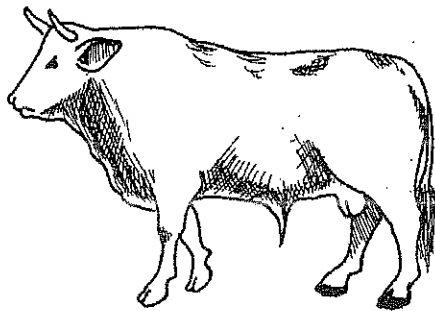
Farmers are interested in their animal's appearance, which they call CONFORMATION.

The diagrams below shows some basic conformation characteristics that farmers usually must consider or look for.

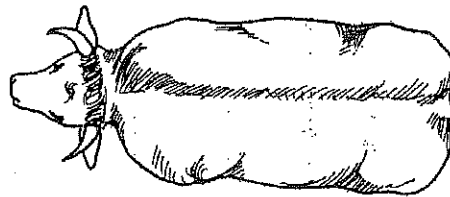
#### 1.31 BEEF ANIMALS

##### 131. BEEF ANIMALS

Fig. 1 Side view



Top view



Beef animals should be :

- Long
- Well muscled on the Hind Quarters
- And square-shaped in body

##### 132. DAIRY ANIMALS

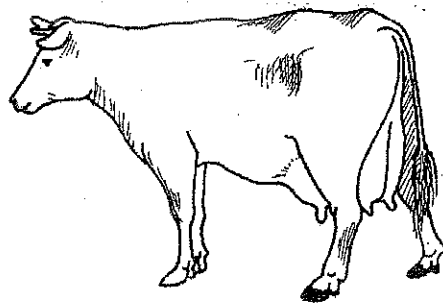
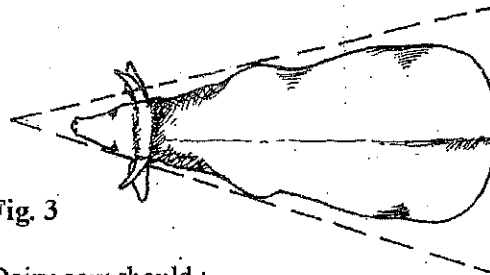


Fig. 3

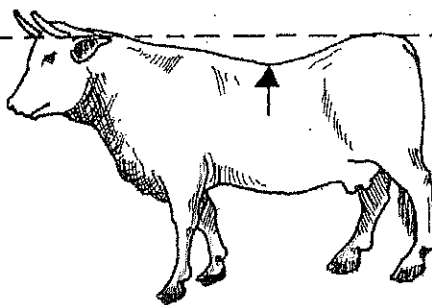


Dairy cow should :

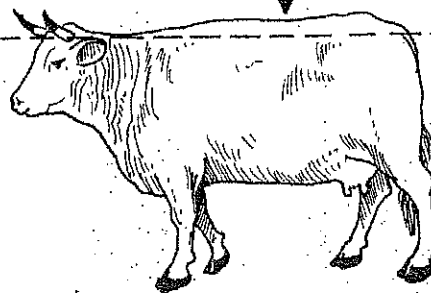
- have big-large udders well attached to the body
- good teats
- have wedge shaped body

##### 133. BAD CONFORMATION

Fig. 4



Bad Conformation



Bad Conformation

#### IV. STARTING A CATTLE PROJECT

The necessity of making use of uncultivated and of earning more incomes, brought people to orient themselves on cattle rearing.

This orientation drives farmers to consider several factors (necessary) before starting their project. They would have to think of :-

1. land
2. labour
3. location
4. access to market
5. water
6. management
7. finance

The following table shows the factors and their criteria to be used for any decision - making

FACTORS	<del>CRITERIA</del>
LAND	Topography. Is it flat/hilly? Fertility - Is the soil rich? Is it too poor? Land tenure - do I have the lease? Am I the custom owner? Natural vegetation - is the area covered with dark bush or not? Is it in a coconut plantation?
LABOUR	- Wages - Amount of work/time - Availability of labour - Needs of/for any worker - Family/Community help
LOCATION	- Access to project area/to town - Transport
MARKET	- Access to abattoir - Prices - Access to town (transport)
WATER	- Availability of water - Water supply - Water conditions - Climate? (rain)
MANAGEMENT	- Who What to manage? How - Skill of farmer (technical) - Loan from bank - Is a management course necessary? - Who to seek advise from?
+ FINANCE	- How much money does he have? - Is the money enough to start the project? - Does he have to make a loan?

## VI. FEED - PASTURE

### A. FEEDING

Cattle use pasture to keep them alive and to reproduce. Grasses and legumes are the food that animals are using everyday.

#### 1. WHAT TO KNOW ABOUT FEEDING

a. ANIMALS REQUIREMENTS. All animals need to feed to :

- \* keep their body machinery working
- \* produce milk, meat, new cells ...
- \* grow
- \* feed the foetus.

b. TYPE OF FOOD

Animals need energy food :

- \* to provide energy used for
  - warmth
  - walk
  - body functions

Animals need protein food :

- \* to build up their bodies (blood, muscles)
- \* in order to grow, build new tissues.

Animals need minerals :

- \* because it is essential for several body functions.

Animals need vitamins :

- \* for good functioning of cells
- \* to protect animals from diseases.

Animals need water :

- \* because it is essential for life.

FATS - animals need fats also. This is a highly energetic type of food.

It is usually stored inside animals body as fats or grease.

NB : The yellow fat which is found inside the carcass of local animal is not accepted for export (to Japan). The fats become yellow because animals consume some plants which contain too much carotene (yellow pigment present in carrot).

## B. PASTURE :

**Definition :** pasture is an area of land covered with grass and legumes for cattle or other animal to graze on.

**GRASS AND LEGUMES.** Good performances of cattle usually depends on feeding. Good feeding leads to good performance. Therefore it is essential to know about pasture used by cattle.

### a. Native grasses/legumes

Grasses : • Tgrass  
• mat grass (carpet grass)  
• buffalo grass

Legumes: • desmodium canum  
• lucaena  
• glycine  
• mimosa : mimosa is considered as weed during wet season, but considered as pasture during dry season because animals consume it.

It has been proved that imported grasses give better results on cattle growth and production than native grasses.

## C. IMPORTED FEEDS

The use of imported feed is very productive but it is too costly. Imported feed could be presented as : pellets, powder ... They are usually used as supplementary feed. Those feed are concentrated feed, i.e. most of water content has been removed and so they contain high percentage of - proteins, carbohydrates, vitamins and minerals. Rock salt is also used in some farms to compensate the deficiency of minerals in pasture.

## D. PASTURE MANAGEMENT

Good management of pasture will always provide the farmer with acceptable results. This includes :-

a. Establishment of pasture - a successful establishment of pasture would provide a LONG TERM PRODUCTIVITY, if the following conditions are applied.

- bush clearing
- adequate supply of quality planting materials
- adequate planting/sowing/growing
- checking growth/weed control
- no grazing until full ground cover is achieved.



b. **Grazing Management**

- 1st year - light grazing (allowed)
- grazing could start when grasses are 30cm high
- over grazing is unuseful (leads to low production, damage to grass, legumes, soil erosion, increase weed invasion).

c. **Weed Control.**

Definition : weeds are unwanted plants in an area. Weeds should always be destroyed as they reduce the productivity of pasture. Some common weeds are listed below:

Pico	)	
pistache (wild)	)	
broom weed	)	
blue rats tail	)	controlled by hand or weedicide
wild tabacco	)	
lantana	)	
guava	)	
mile minute	)	

d. **Stocking rate.** This is the number of animals grazing in one area unit (ha).

- high stocking rate leads to over grazing (reduced food intake/animal)
- low stocking rate leads to undergrazing.

A convenient rate should be applied on every pasture depending on the

- species (nutritional value, vigourosity ..)
- age
- density
- season: - wet season farmers can increase stocking rate  
- during dry season the stocking rate should be decreased.

In Vanuatu 1 AU/ha is applied as average for most of the pasture.

(where AU - animal unit - e.g: 1 AU = Steer  
1.5 AU = Bull  
0.5 AU = Weaners)

e. **How to prepare ground for pasture establishment.**

(1) Steps in preparation :

- Bush Clearing** : this could be done by bulldozer, axe, bushknife/burning/clearing.

ii. Land Preparation : after the ground is cleared the ploughing could be done to reduce the top soil into find tilth in order to have a good germination of seeds or good condition for vegetative propagation growth.

- when cuttings are used for planting, good soil preparation is also needed (use of hoe, spade).

iii. Planting of grasses/legumes :

Seed sowing : sowing rate : depends on species  
2 - 5kg/ha.

Type of sowing : - broadcasting  
: - following some lines

N.B : the uniformity of seed spreading must be respected.

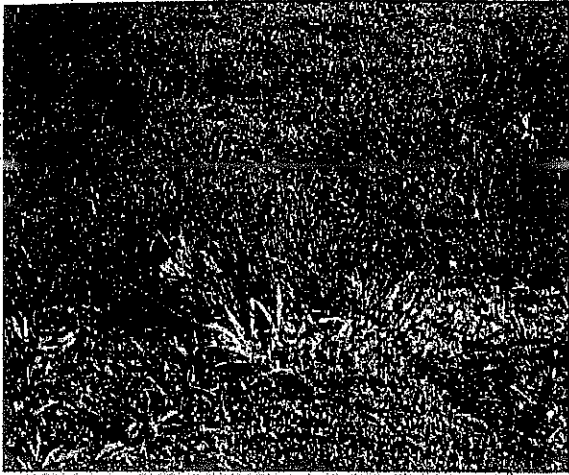
f. Vegetative Propagation - this means we multiply or propagate the grass by using parts of plant. The parts of grass must include the stem, leaves, root system. It is advisable for the farmer to prepare a small nursery of pasture so he can use the cuttings in the future for planting a new paddock.

\* the requirements for vegetative propagation

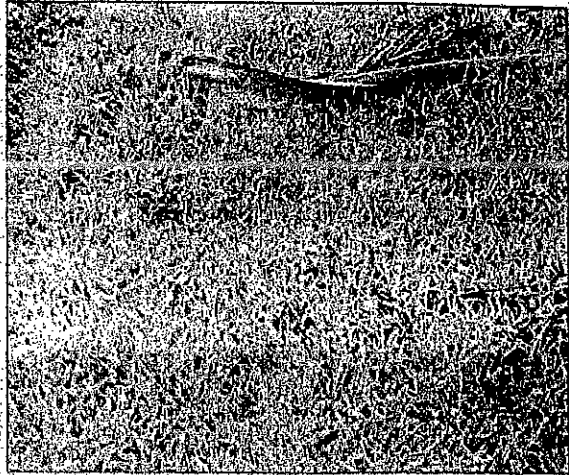
i. spacing

ii. depth of planting : 1. a hole is dug (15cm deep)  
2. select good cuttings which have many nodes - root system and are mature  
3. plant the cutting (trimming may be needed)  
4. firming and watering

GRASS



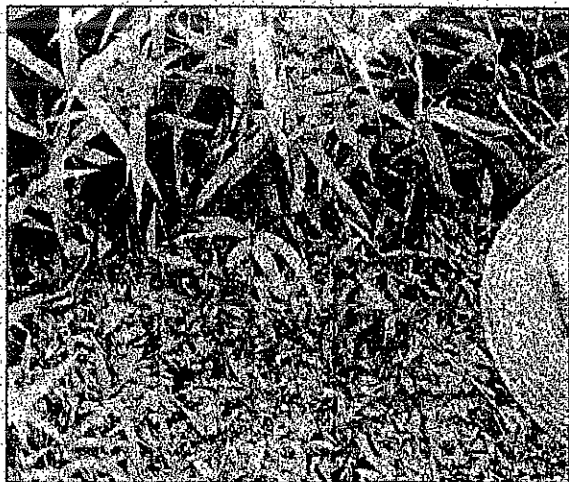
*Koronivia.*



*Buffalo grass.*



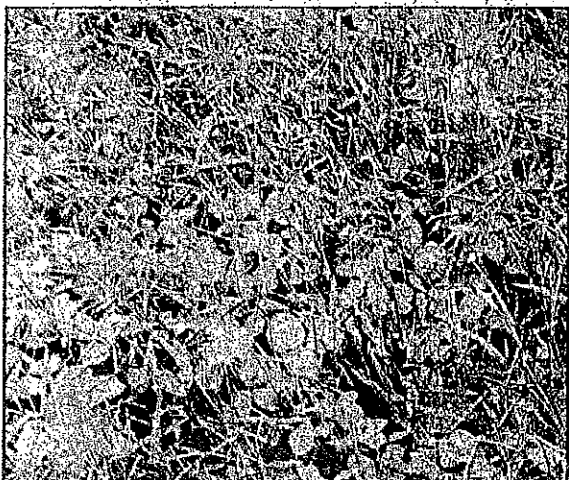
*Carpet grass.*



*T-grass.*



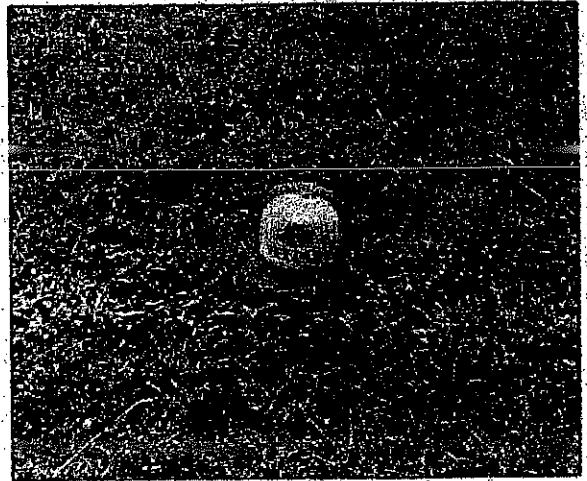
*Signal grass.*



*Sabi grass.*



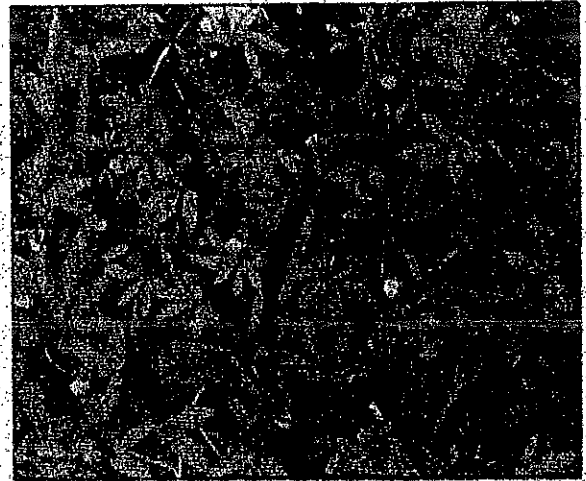
*Phosphorus deficiency*



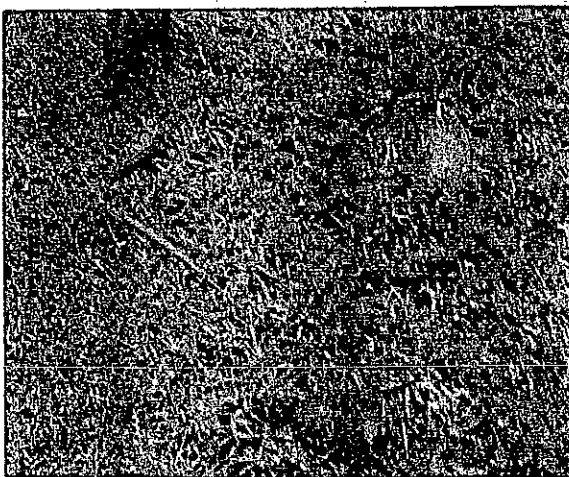
*Nadi blue grass.*



*Para grass.*

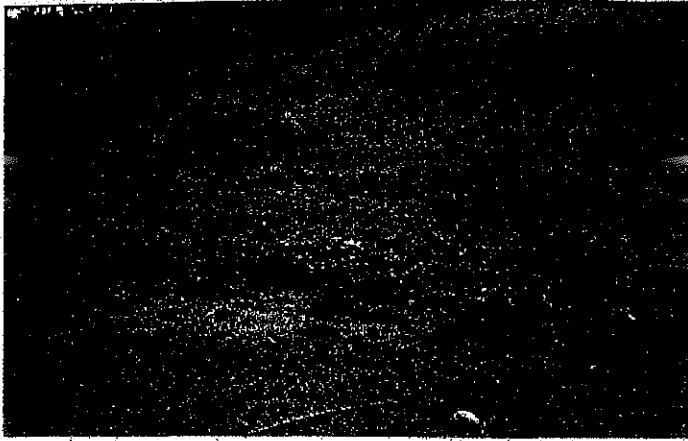


*Sensitive plant.*



*Indian blue grass.*

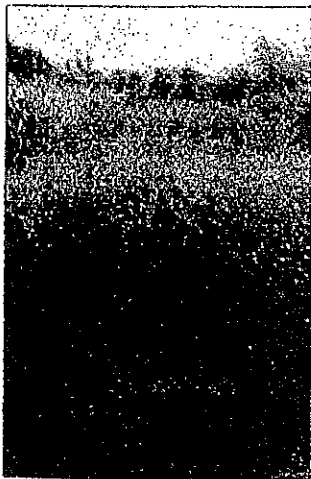
~~GRASS~~ → LEGUMES. LEGUMES



Legumes which give nitrogen to the pasture



Verano stylo.

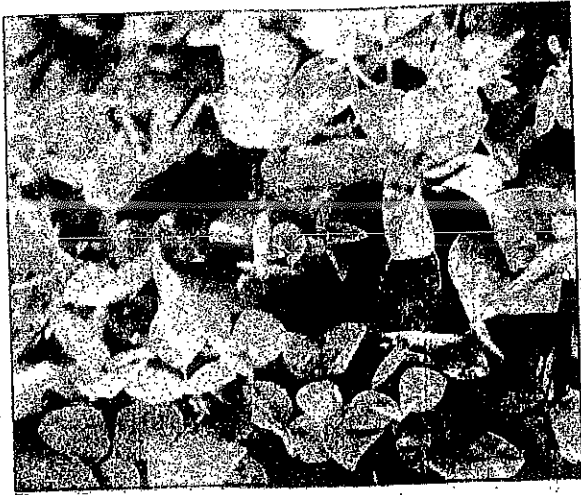


Seca stylo.



Cook stylo.

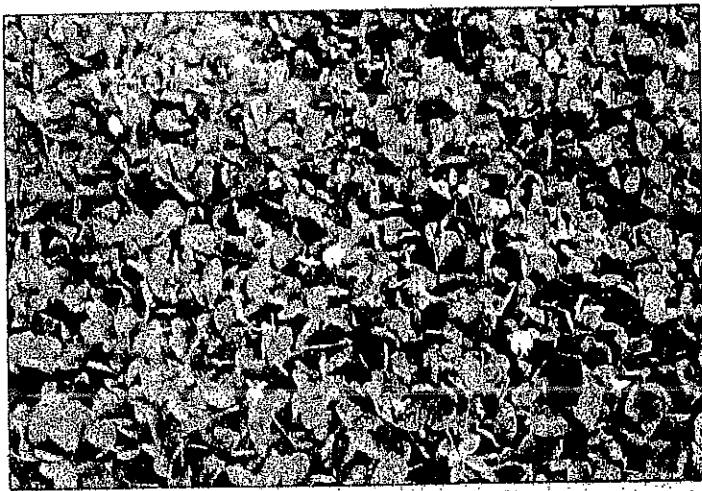
# LEGUME



*Shaw vigna.*



*Centro*



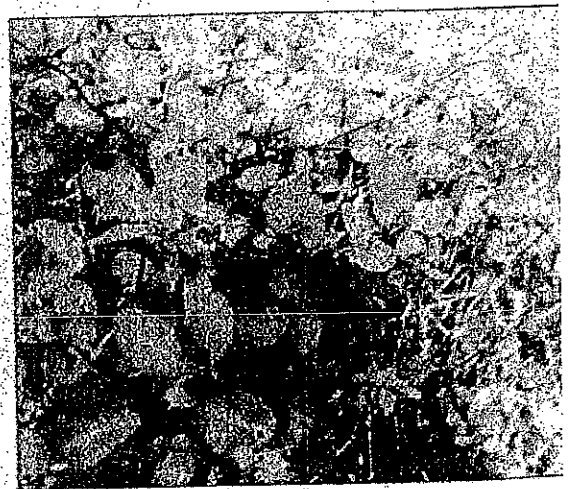
*Pinto peanut.*



*Indigofera spicata.*



*Desmodium ovalifolium.*



*Alysicarpus vaginalis.*



# LEGUME



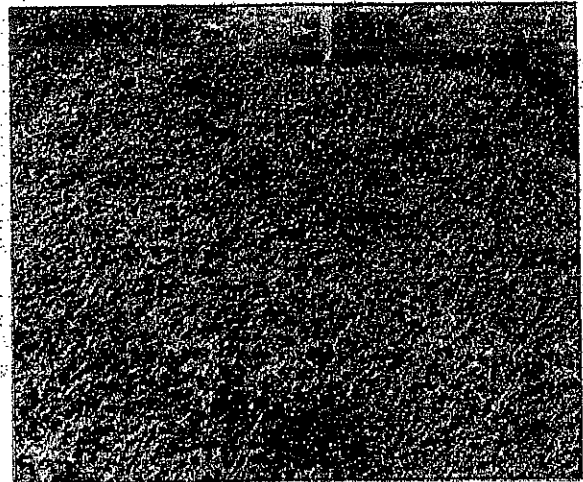
*Teramnus labialis.*



*Glycine.*



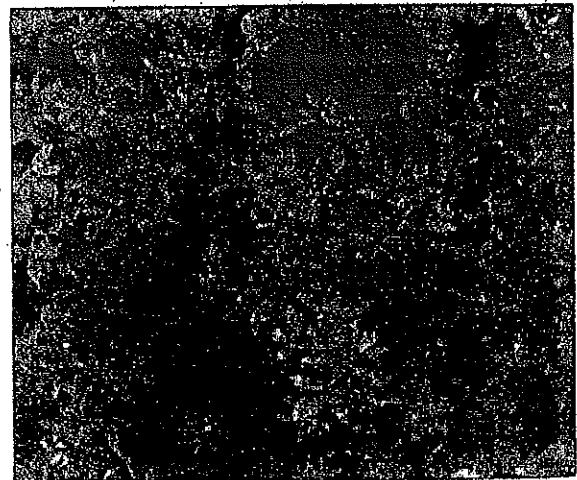
*Creeping vigna.*



*Arachis repens.*



*Hetero*

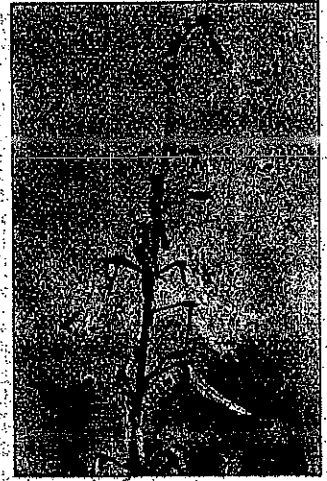


*Potassium deficiency*

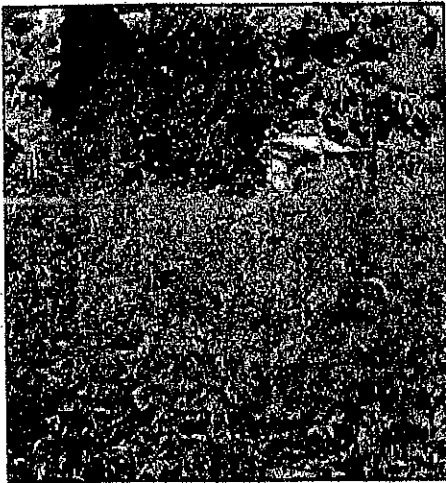
## LEGUME



*Leucaena.*



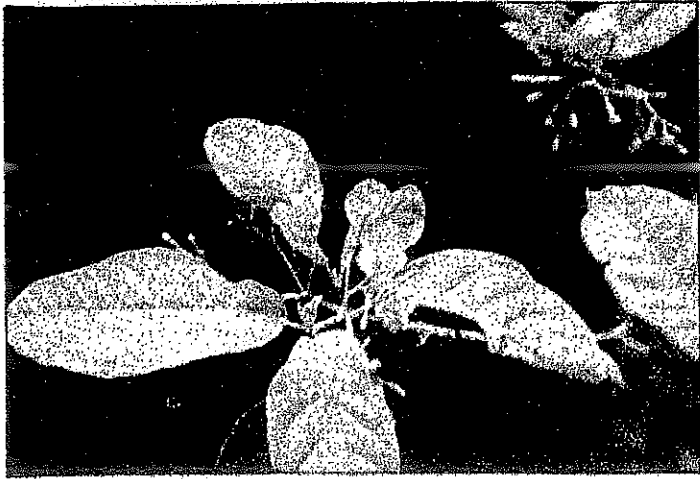
*Local desmodium.*



*Glenn joint vetch.*



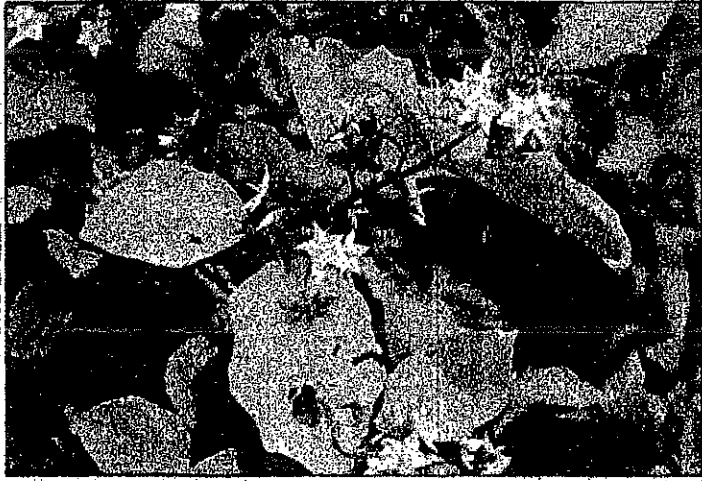
# PASTURE WEED



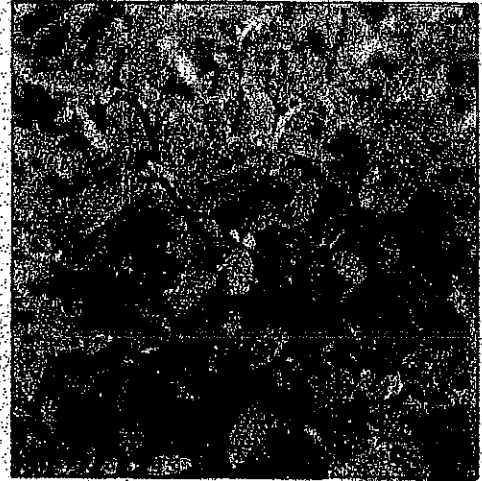
*Nasasa*



*Nangalat*



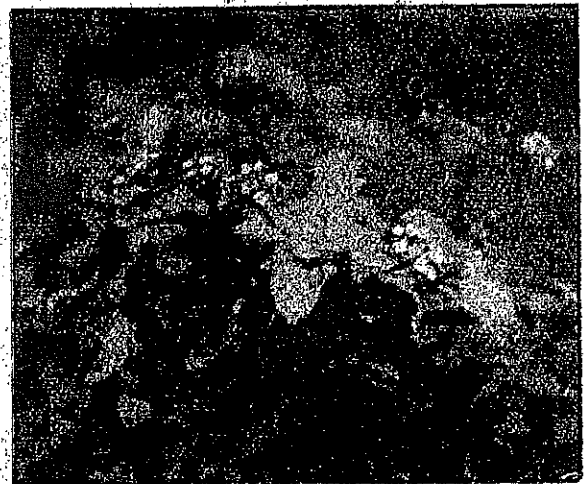
*Pico*



*Big Leaf Broom*



*Wild Kava*



*Lantana*

# PASTURE WEED



*Small Leaf Broom*



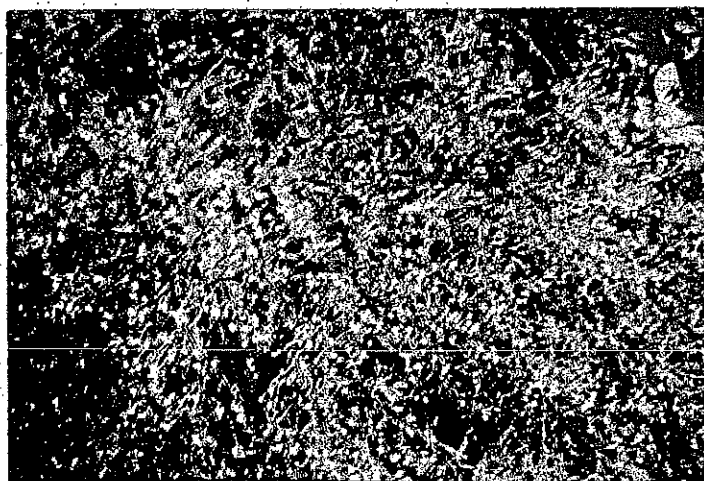
*Wild Taro*



*Korosol*



*Guava*



*Parthenium*



*Mile-a-minute*

# PASTURE WEED



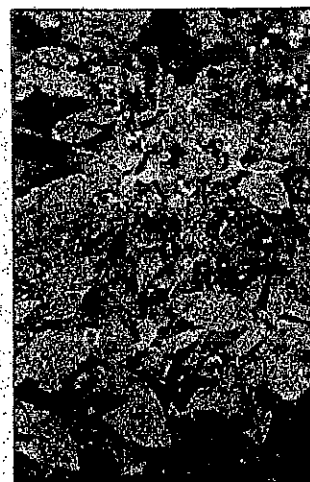
*Hibiscus Burr*



*Big Leaf Wild Tobacco*



*Wild Pistache*



*Spiny Amaranth*



*Castor Oil Plant*



*Large sensitive weed*

# PASTURE WEED



*Vitex*



*Indigofera*



*Fern*



*Blue Rat's Tail*

## VII. BREEDING

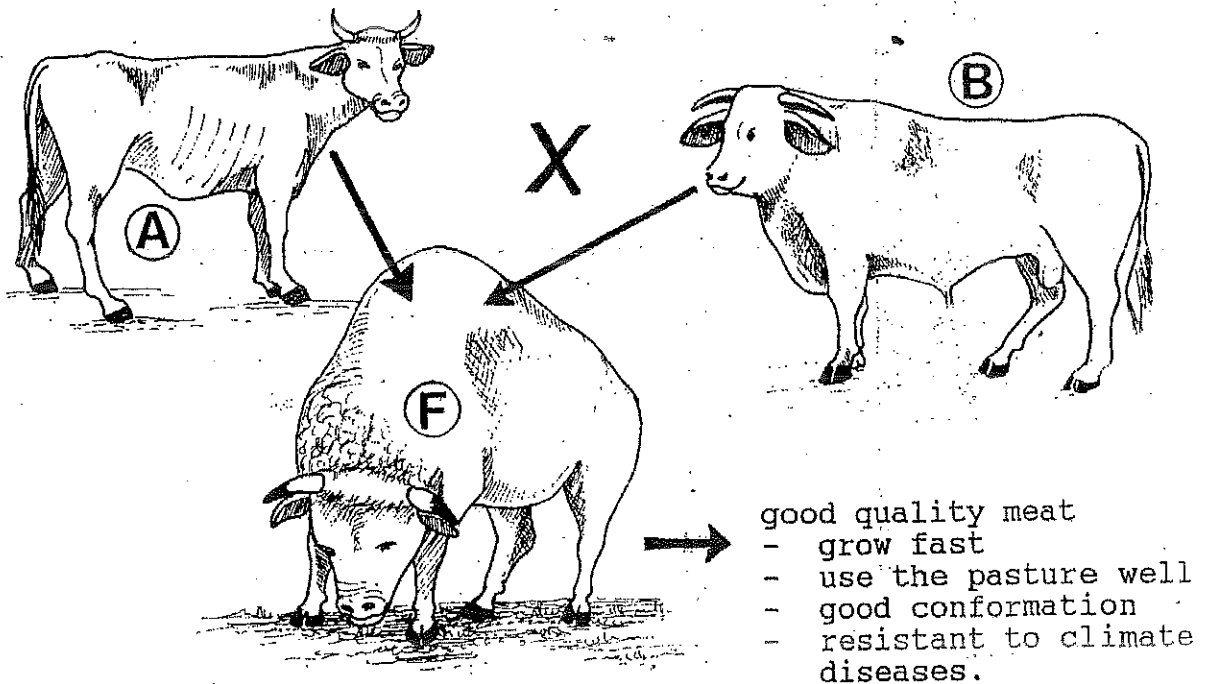
### A. HERD IMPROVEMENT

Animals may sometimes issued from poor or low productive parents (or breeds) in terms of:

- growth rate
- conformation
- resistance to climate/diseases
- fertility
- feed conversion ratio

Fortunately farmers can improve such animals and their offsprings by introducing a new (blood) breed in their herd with higher standards to upgrade the herd performance. This new breed is usually an improved breed or a hybrid.

- A. poor parent
- B. improved breed
- F. offspring with higher standard than (A).



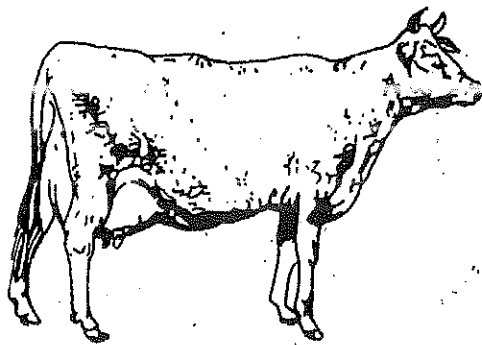
Methods of breeding for improvement of breed (herd)

- cross breeding produce hybrid
- inbreeding rapid progress
- artificial insemination.

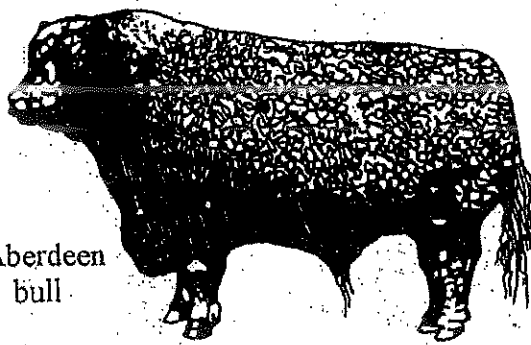
Other factors to be considered in herd improvement are:

- pasture (good quality = improved pasture)
- good herd management
- sanitation (health of animals)

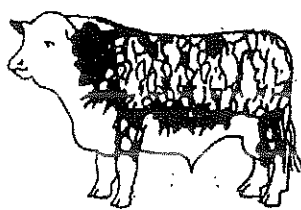
BREEDS OF CATTLE



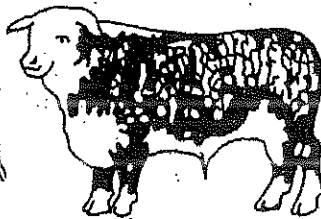
- Jersey cow



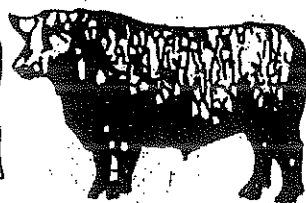
- Aberdeen bull



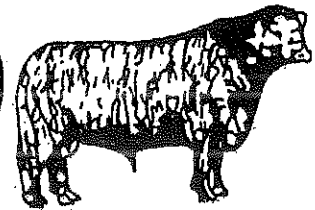
Angus bull



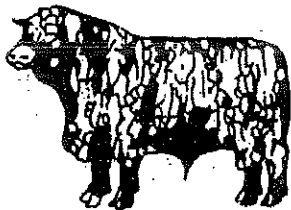
- Hereford



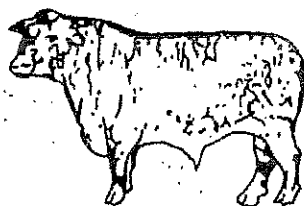
- Angus



- Red poll



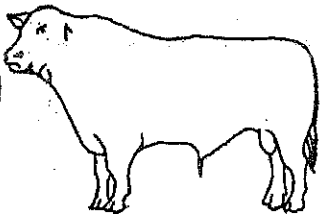
- Shorthorn



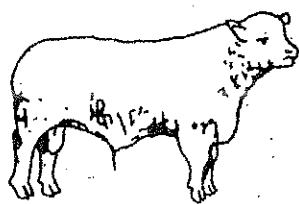
- Polled shorthorn



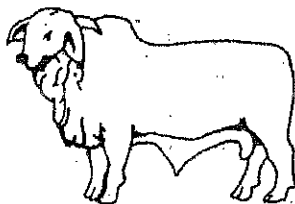
- Devon



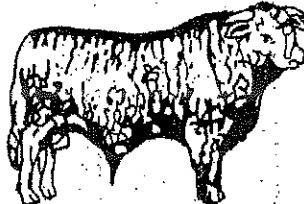
- Charolais



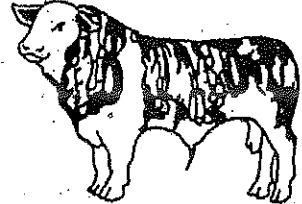
- Murray grey (AYxSH)



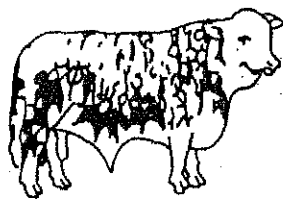
- Brahman



- Santa gertrudis (BxSH)



- Simmental



- Braford (BxH)



- Brangus (BxAA)



- Droughtmaster (BxSH)

## B. BREEDS

This is the name given to animals which share the same characteristics :

- colour
- conformation ...

a. Classification - the two species of cattle present in Vanuatu are Bos Taurus, Bos Indicus. Below are some of the characteristics which differentiates the two species.

### Bos Taurus (European Cattle)

1. No hump
2. Head short/wide
3. Skin held tightly to body
4. Back line straight or relatively straight
5. Large amount of subcutaneous fat
6. Hip bone wide and outstanding
7. Hairs relatively long
8. Ears rounded, held upright
9. Few sweat glands

### Bos Indicus (Zebu Cattle)

1. Hump present
2. Long narrow head
3. Skin loose (in folds)
4. Back line high at shoulder, low behind the hump sloping down over tail bud
5. Small amount of subcutaneous fat
6. Hip bone narrow
7. Hair short and smooth
8. Long drooping ears, pointed
9. Many sweat glands

b. Local Breed - local breeds usually have red colour with white patches. The animals usually have horns. They usually are medium sized animals with comparatively low growth rate.

### Advantages of keeping local breeds.

- resistant to climate
- make use well of local pasture
- early maturity

They are cattle which are the result of mixture of many unknown breeds.

### c. Imported Breeds

i. Characteristics - a. Beef Cattle - Charolais (exotic breed from France. This breed has contributed a lot in crossbreeding of animals around Vanuatu. The offsprings resulted from crossbreeding have usually creamy colours.



Charolais Cattle are : large  
heavy  
long deep body  
hind quarters are well fleshed  
colour : white/cream  
head short/broad

Limousin (exotic breed from France)

Characteristics : dark yellow brown colour  
head short/broad  
deep body  
'short' legs  
good quality meat  
(more meat/less bone)

Brahman (Indian Breed)

Characteristics : humped animal  
heat tolerant  
disease resistant  
steel grey coloured  
long head  
dropped long and pointed ears  
fast growing breed

Herefords (English Breed)

Characteristics : red colour  
patches of white hair on face down  
to throat along the top of the back  
to shoulders on feet and bottom of  
tail.

Some Herefords have flat shiny coat - coat for humid and hot areas provided that there is enough shade. Others have thick woolly coat so they could feel hot in Vanuatu climate. As a result they won't grow well. Some have no horns (polled herefords).

Shorthorn :

is a big animal with short horns  
dark red in colour (or all white colour)  
some shorthorn have no horns ("polled  
short horn").

d. Dairy Cattle

Jersey : - Coat colour :- fawn to brown and to brownish  
black  
- heads are short  
- heads have a 'dish' between the eyes  
(concare)  
- Dark muzzle  
- very good conformation of udder  
- Mature earlier than others



This breed was developed in the island of Jersey. It is a good milk producer.

- Friesian - Colour : - black and white  
i.e. white tail switch and white  
on the lower part of legs.
- Deep body and tail animals -
  - Broad level Rump

There are 3 main types of Friesian -

- Dutch Friesian
- Holstein Friesian
- British Friesian

These Friesian Breeds are very good milk producers.

- e. Hybrids - Hybrids are animals obtained from crossing animals of different breeds. They usually have better performances than their parents. Some of the breeds which are obtained from such crossing are :
- Santa Gertrudis (Brahman x Short Horn)
  - Drought (Brahman x Short Horn)
  - Brangus (Brahman x Aberdeen Angus)
  - Murray Grey (Angus x Short Horn)
  - Bradford (Brahman x Hereford)

All these hybrids are nowadays called Pure Breeds. Through crossing these animals for a long period of time, the individual animals do not show individual characteristics of their parents. They show special characters of their own. So on crossing between these animals, their special characters are given to their offspring. Presently the cross breedings practised in Vanuatu between imported breed and local breeds produce Hybrids which are suitable to Vanuatu's environment and that have good characteristics - good quality carcass.

- fast growth rate
- resistant to climate/pests and diseases
- good conformation

### C. NATURAL REPRODUCTION

Cattle can reproduce at anytime of the year. Cows usually drop one calf in a year. Animals reach their puberty when they have about 9 - 12 months of age. That means they can start to breed. But usually farmers use young animals for breeding according to their :

- conformation
  - age : (18 - 24 months)
  - weight : e.g. heifers must have 2/3 of their adult live weight before mating (18 months)
- a. Reproduction : it is regulated by the oestrus cycle of the female. Thus there is not mating unless the female is ready or is 'on heat'.
- b. Oestrus Cycle : this is the period of time needed for an ovum in the ovary to be formed, fully developed and released (if the cow is not pregnant). Duration of oestrus cycle : 21 days (20 - 24 days).
- c. Oestrus : at the end of the oestrus cycle, the oestrus occurs, which is a period (35 hours) - characterized by signs of willingness to accept mating. At this particular time, the female is said to be 'on heat'. Ovulation (released of ovum from ovary to the funnel). It normally takes place at the end of oestrus).
- d. Signs of Oestrus
- wet
  - shows willingness
  - mounting
  - finally let others mount herself (this is the best time for mating or A.I.).
- e. Gestation (PREGNANCY) - This is the period between fertilization and parturition in which a cow is carrying a foetus in its womb. It lasts for 280 - 283 days (9 months). It ends with calving which is the process of delivering calf (also called PARTURITION).

### D. ARTIFICIAL INSEMINATION

This is the introduction of semen in female genital organs by HUMAN DEVICE.

#### a. ADVANTAGES

- enables farmers to improve their stock (introduction of new blood)
- cross breeding is much easier to manage
- breed more cows
- poor breed soon will be upgraded up to high standard
- A.I. eliminates problem of differences in sizes
- less costly than keeping a bull

b. DISADVANTAGES

- oestrus cycle must be well understood
- requires high skills to be performed
- heats must be detected all the time

c. PROCEDURES

- semen collected from selected bulls and stored in liquid nitrogen container at very very low temperature (freezing)
- semen use when required
- inseminator is called when selected animals for breeding are 'on heat'.
- insemination is done
- insemination must be repeated every 21 days when cow shows signs of heat again (i.e. no fertilization no pregnancy).

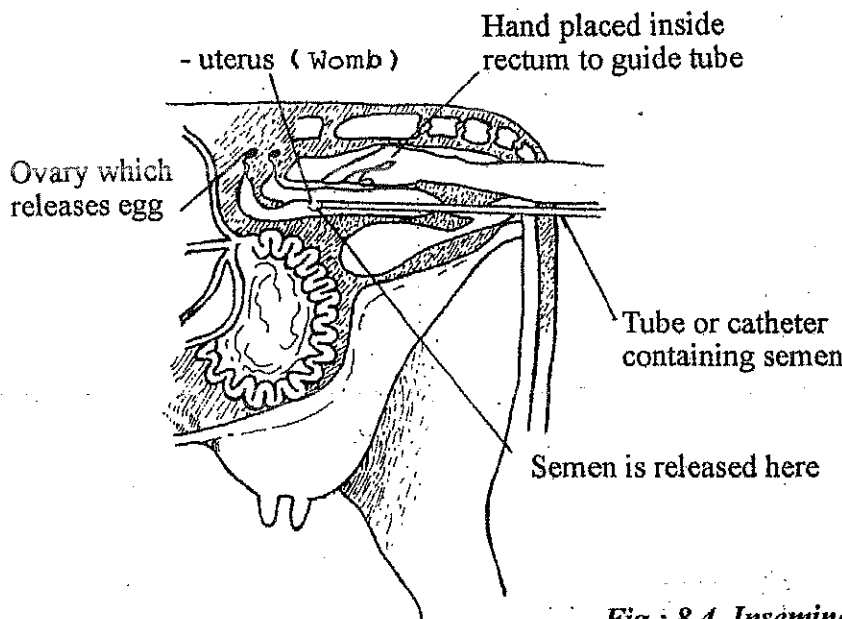


Fig : 8.4 Inseminating a cow

E. WORK OF VLD

VLD stands for Vanuatu Livestock Development. It has its center at Teouma on Efate. It works mainly on :

- research on pastures
- breeding cattle - the bulls and heifers which are produced at VLD are then sold to farmers in the country. This helps in upgrading the local animals qualities.

The crosses that the VLD is practicing are :

Africander	x	Limousin
Africander	x	Hereford
Brahman	x	Limousin
Brahman	x	Hereford
Brahman	x	Charolais

## VII. HERD MANAGEMENT

### 1. Behaviour / control of stocks

a. Behaviour - cattle is an animal like other animal which have different behaviour. Here we would look only at the types of behaviour that interest us.

Social behaviour - cattle are animals which like to be in groups. A bull is always taking leadership of the herd.

Feeding - cattle feed all the time except when its stomach is full. In this case it has to sit under tree shades in order to Ruminates (or chewing the cuds).

Shelter seeking - cattles like other animals, like to find a place to protect itself against weather condition. That is why it is good to construct a shelter for animals during bad season.

Habituation - cattle learn new behaviour patterns when practices are repeated and the animals is rewarded or punished.

Reproductive behaviour - the observation of the reproductive behaviour of cattle may help the farmer to take action. e.g. when cattle is on heat a farmer calls for an inseminator.

### b. Control of stock

Point 1. The farmer should separate his herd into groups of animals.

- i. group of weaners
- ii. group of heifers
- iii. group of steers
- iv. group of calves and cow and bulls and pregnant cow.

This will facilitate the control of stock because each category has its own requirements. For e.g. Weaners do not need as much afood as the steers. So they could be put in a small paddock. Heifers must not be mated before 18 months old or 2/3 of their adult weight. So they must not be placed with bulls etc.

Point 2. The farmer should walk close to his animals at least 5 times a week so this cattle would know him. He should use repeated method of control (e.g. moving animals with horse or dog) so that animal may get use to it. Another example is - moving animals quietly to stockyard once a week, so that animals will not cause problem in the stockyard in the future (for transport to abattoir).

Point 3. The farmer should visit his animals everyday to see which one :

- is on heat if so contact inseminator or put the bull with it
- has delivered, if so check the calf
- if missing, so take action etc.

Point 4. Farmer must avoid overgrazing or under grazing or he must -

- divide his fence into paddocks
- move his animals from one paddock to another one as soon as the pasture starts to suffer
- plant good pasture

Farmer must also : try to do weighing of his young animals and record the performances every 3 months. Then he could do better selection for his breeding stock.

2. Control of breeding stock - breeding of animals should be controlled as it

- minimizes the rate of infertility in herd
- facilitates breeding
- eliminates non-productive stock

Success in this area of management depends on

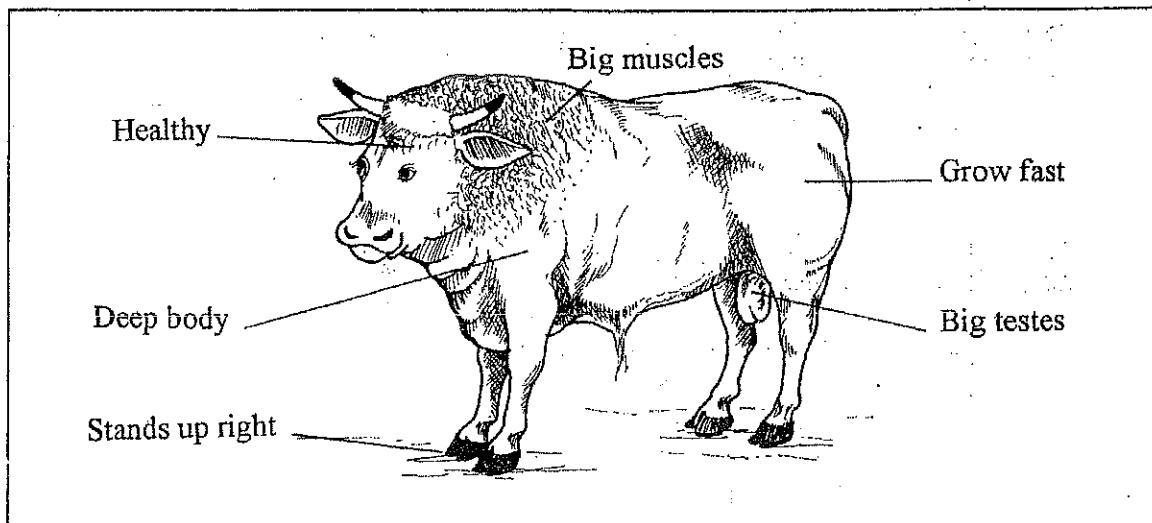
- the animal selected for breeding
- the ways of mating breeding animals
- management of breeding animals (breeding stocks)

a. Selection of breeding animals

i. Breeding bulls

- \* Age : over 2 years
- \* Other characteristics - strong  
- gives plenty of strong calves

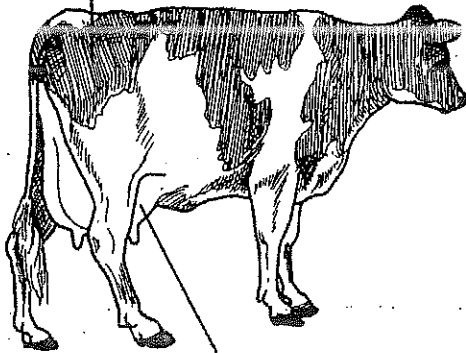
- conformation (Body strong and well proportioned)
- excellent breed



ii. Breeding females It should

- come from good parent (Breed)
- produces big calves
- long, tall
- records (dairy cow) of milk produce
- strong
- healthy / fit

Rear well developed



Big udders

b. Ways of mating breeding animals - farmers can let a bull run with a herd all year round or the bull is allowed to run with a herd for a period of time (2 -3 months). Ration bull/cow should be in average 1 bull = 20 cows.

c. Management of breeding animals (or stock)

- breeding animals should be provided with good pasture (for gestation/lactation/growth of calf)
- selection must be done early (10 - 18 months)
- unwanted animals for breeding should be culled/castrated.
- do not let female animals get too fat (infertility)
- if possible time the breeding so to have most calving when pastures are good
- separate breeding animals from others
- never be without a bull for more than 1 - 2 month
- too old bulls should be culled (more than 7 years)
- respect the bull/cow ration (a bull can handle 30 cows)
- check and cull infertile animals

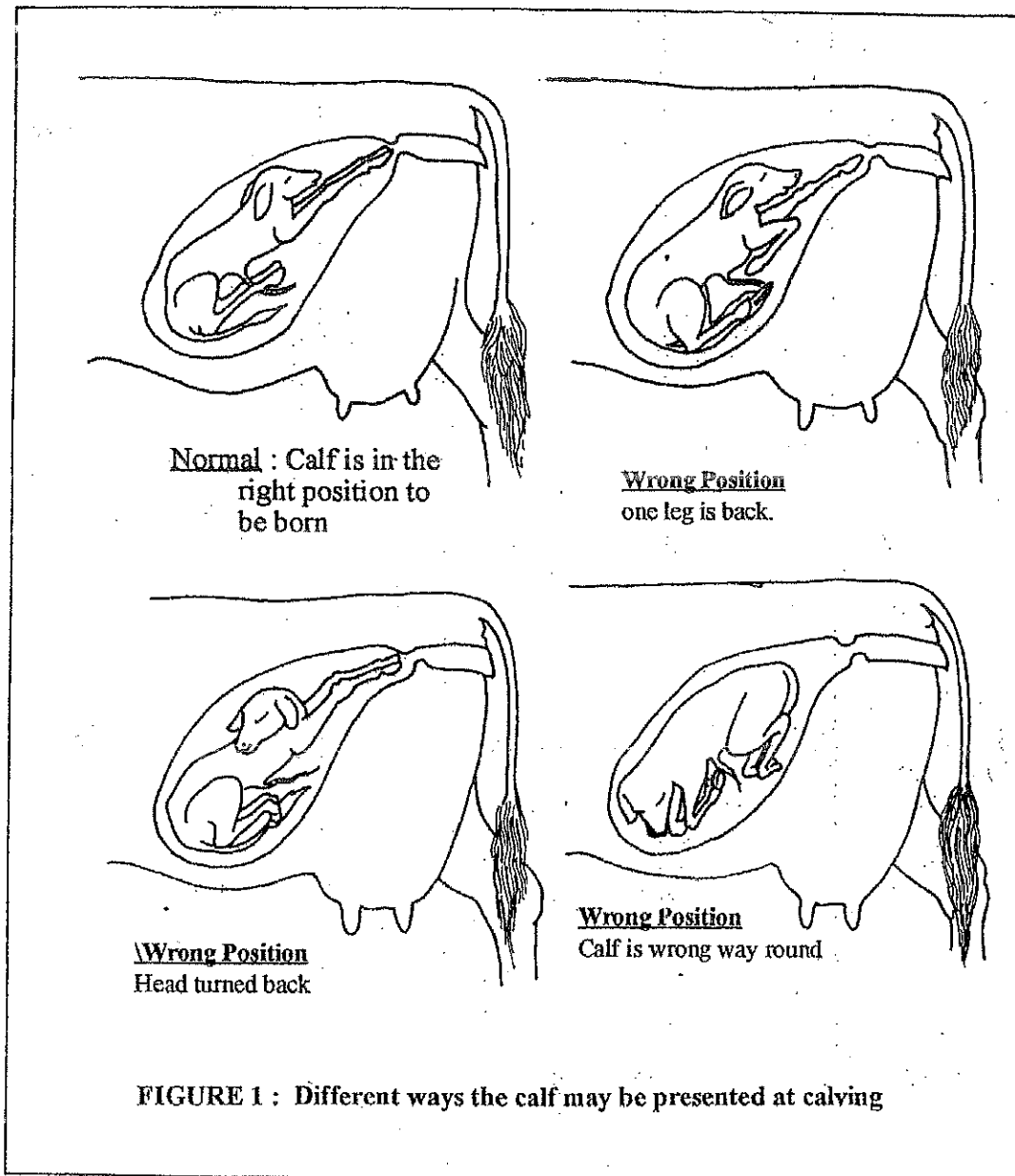
3. Calving - This refers to parturition in cow, signs of approaching calving are

- udder enlargement
- vaginal discharge (white/sticky mucus)
- animal restless
- isolation

Cows usually deliver without any difficulties but sometimes has trouble because of the abnormal presentation of calf.

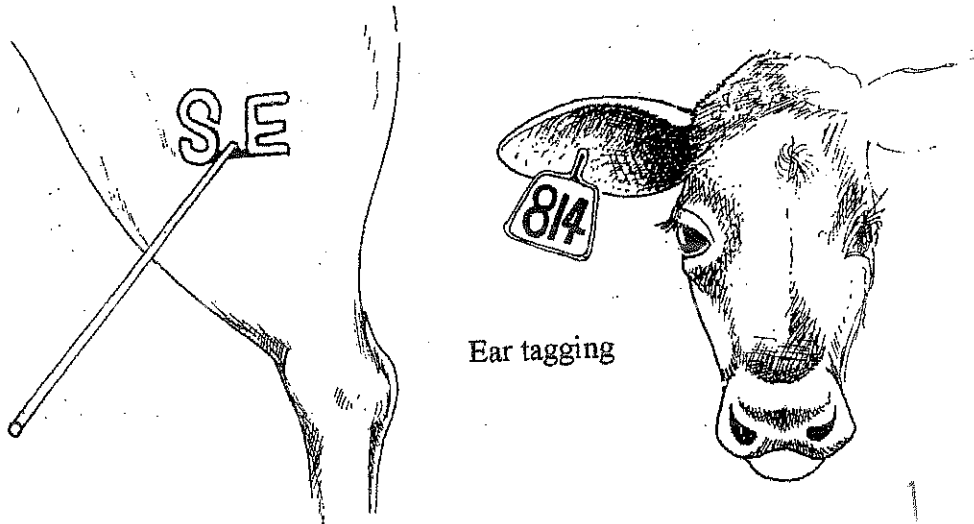
Figures show the position of calves.

Usually a cow can produce a calf by herself without any help. Heifers producing their first calf sometimes have trouble and need some help. If abnormal presentation (the calf in the wrong position) occurs, then you have to help.



**FIGURE 1 : Different ways the calf may be presented at calving**

4. Identification - ease management
- a. Importance - easy identification of individuals  
 - facilities recording of animals (weight)  
 - shows ownership
- b. Types of identification
- i. ear tagging
  - ii. branding
  - iii. materials used for each one
  - iv. when to do identification



5. Weaning - weaning on cattle animal must be done when the calf is about 6 - 7 months. It should be done earlier when food is available. The calf must be removed from its mother in order to change its own diet (more grass and for the mother to reproduce again).
6. Castration - castration is the removal of testes, practiced on unwanted (male) breeding animals. The earlier males are castrated, the less shock to the animal.

Purposes - animals becomes quiet  
 - gives good quality meat  
 - prevent unplanned mating

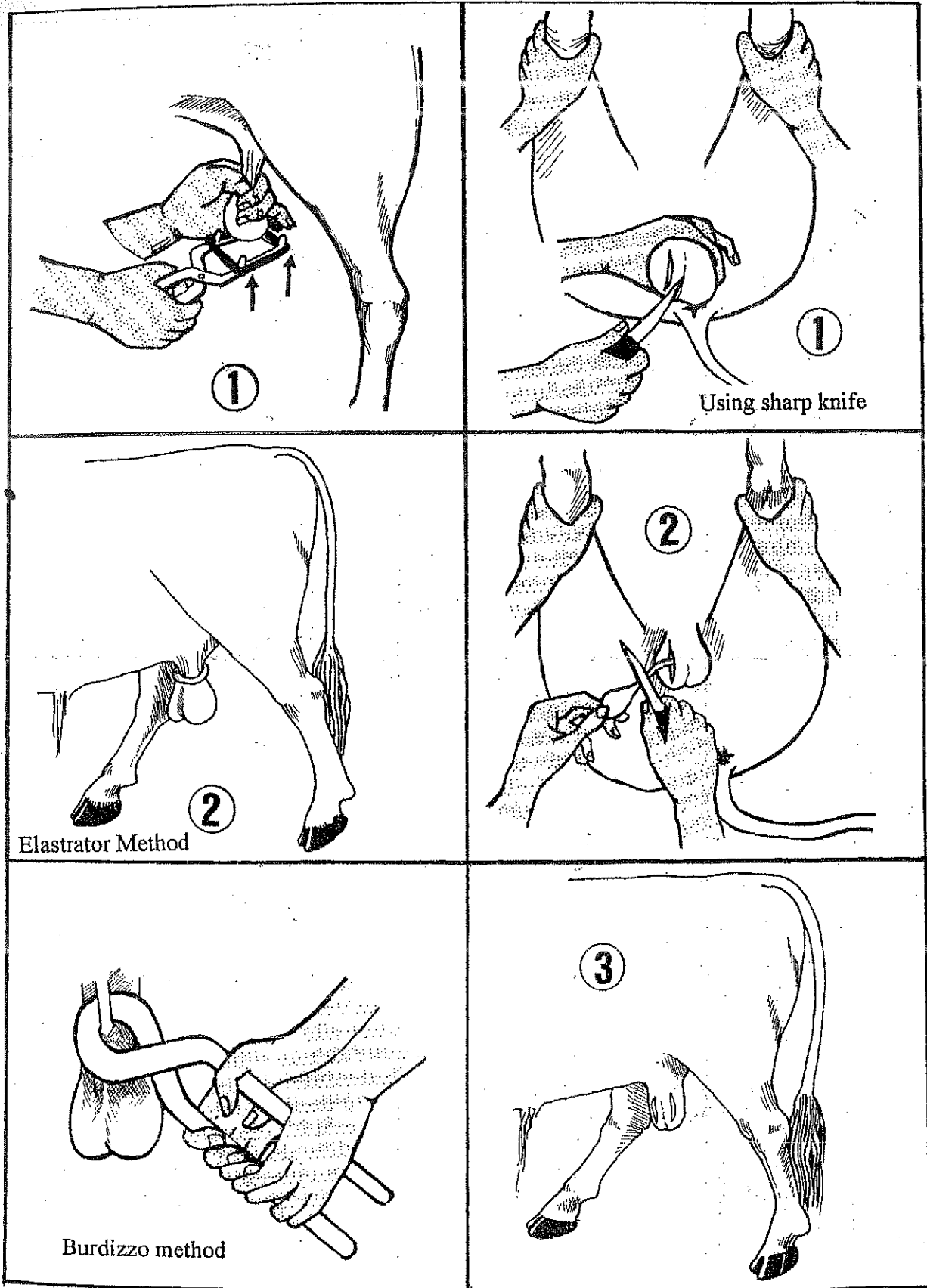
Methods - sharp knife  
 - elastrator  
 - burdizzo method : crushing the sperm duct.

The age of castration varies from 2 - 6 months.

N.B : Castrate bull is against the law.



Diagram of Methods

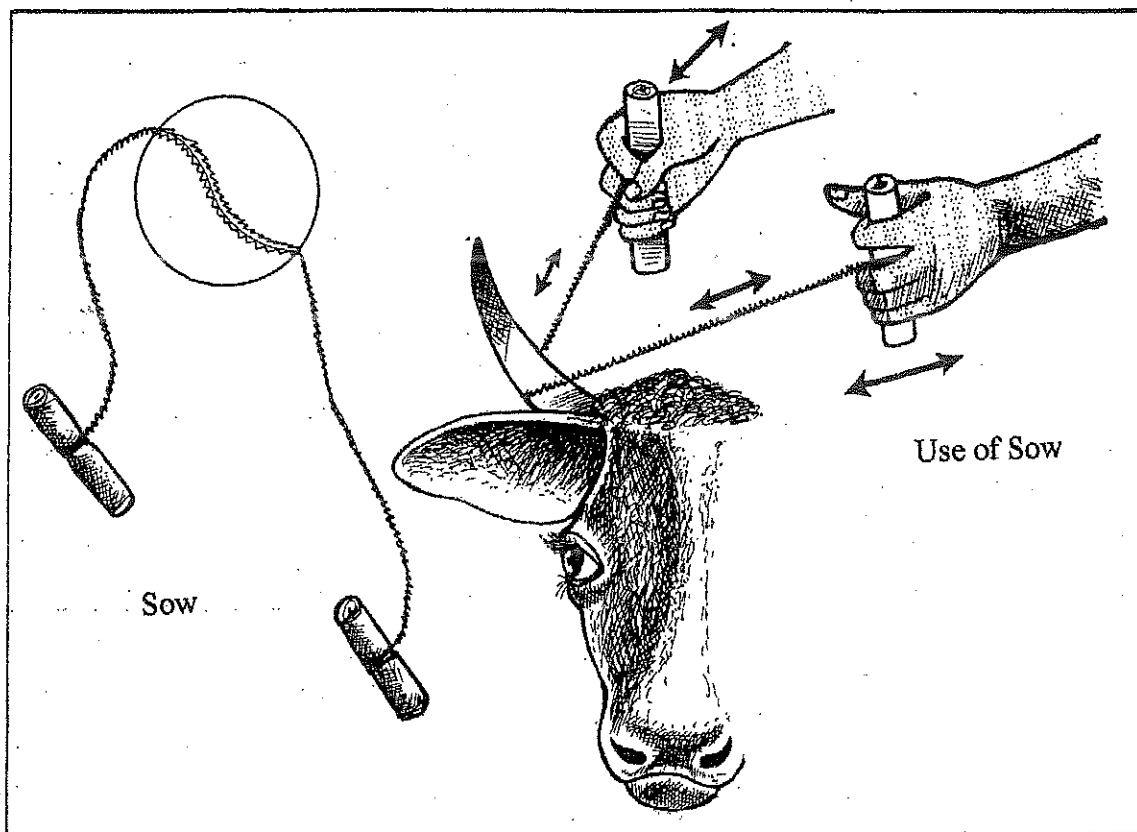


## 7. Dehorning

Importance - remove parts or entire horn in order to  
reduce injuries when - fighting  
- not well oriented

### Method/tools to be used

- natural - use of polled breed
- use of saw - steel wire



## 8. Culling

Culling is removal of unwanted animals because of several reasons :

- too old animals
- infertile animals
- diseased animals (TB)
- dangerous animals

Those animals could be sold to Abattoir to be killed/buried (TB case).

## 10. Fencing

In order to manage well the cattle herd, the fencing must be well established and so to be kept.

A fence must include :

- \* **Corner posts (or strainer posts)**  
They should be set 1m deep in ground and be fixed with poles.
- \* **Wooden posts (or Running posts)**  
They must be set in the ground every 3 metres and to a depth of 60 cm deep.
- \* **Wooden spacers**  
Use between posts to keep wires the right distance apart. They must not touch the ground.
- \* **Wire**  
Four or five strands of wire are to be used. It should be strained tightly. Wire should be stapled inside of the posts.
- \* **Gates**  
Gates can be made from poles or wire and poles or as cattle grid (but expensive)

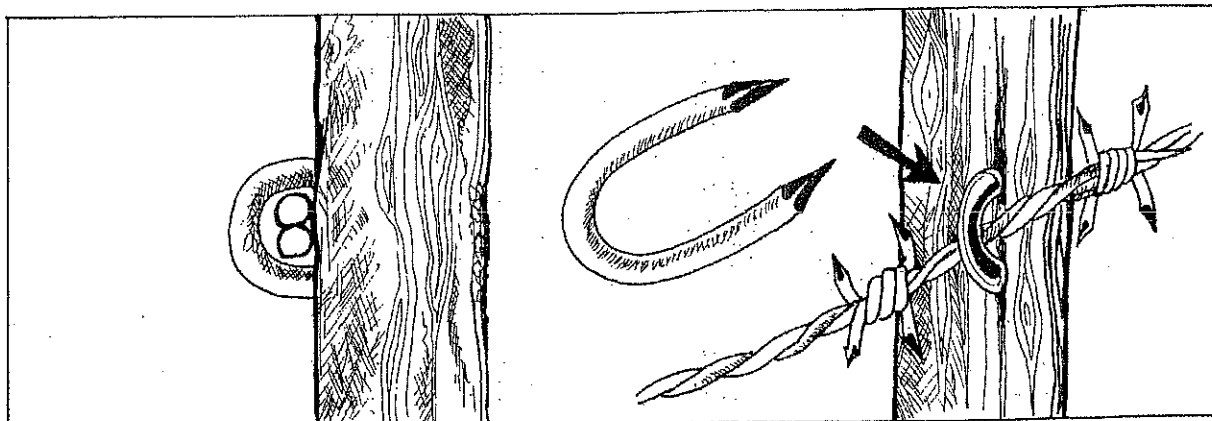
When boundary fence is used, then the posts must be treated, so, to be resistant to weather conditions.

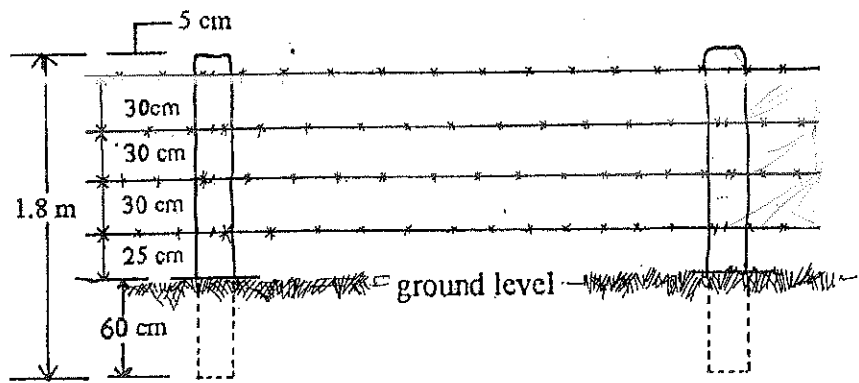
G. Electric fence are fences on which electricity is connected on the wire. The charged wire gives electric shocks when touched. It is a useful system to keep away thieves, dogs.

A good farmer checks his fence regularly to :

- repair it as soon as it is broken down
- replace decayed posts

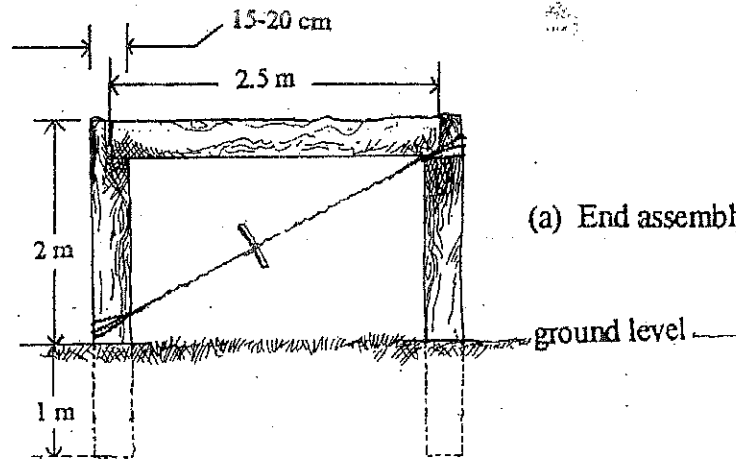
Below is a diagram showing how to fix staple on posts, and other diagrams of fencing.





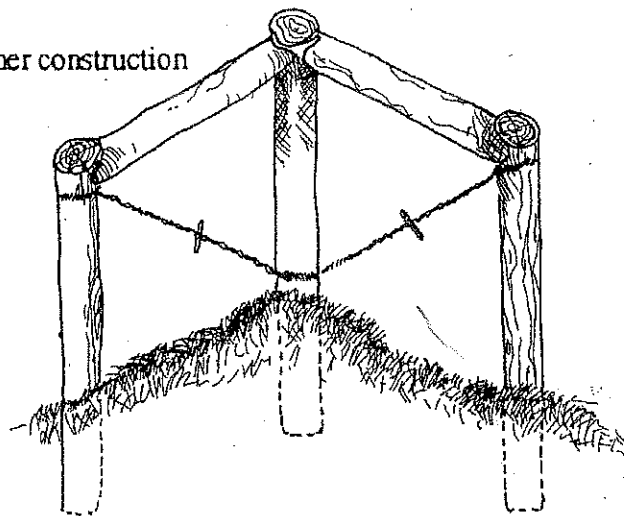
(a) Barbed wire

Spoung between strands



(a) End assembly

(a) corner construction

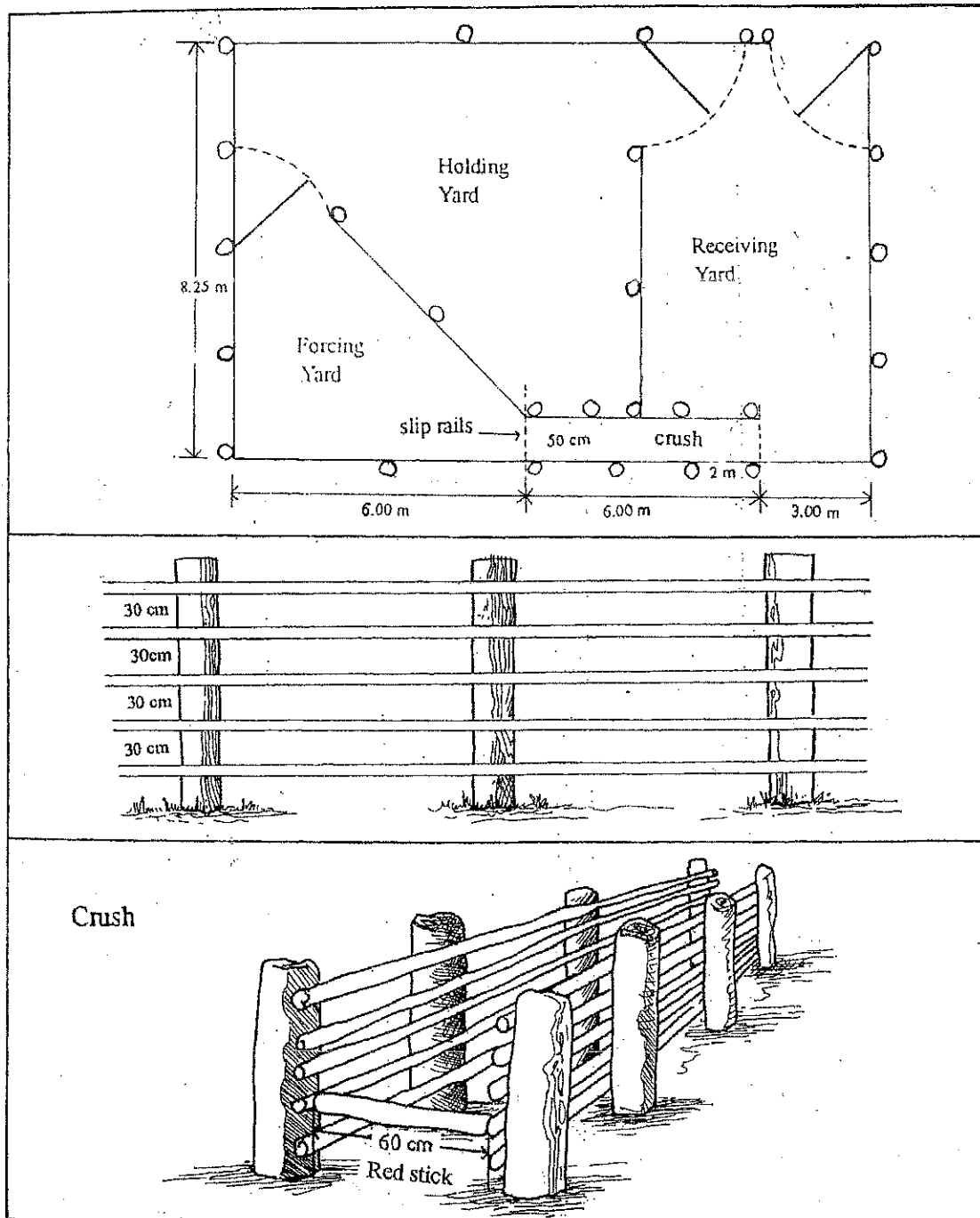


11. Stockyard

Purpose - easy handling of animals. Where to place stockyard? Corner of paddock.

Which materials to be used? - hard wood posts  
- timber for rails  
- nails  
- bolts/nuts

The figure shows a layout of a stockyard including - spacing of posts.

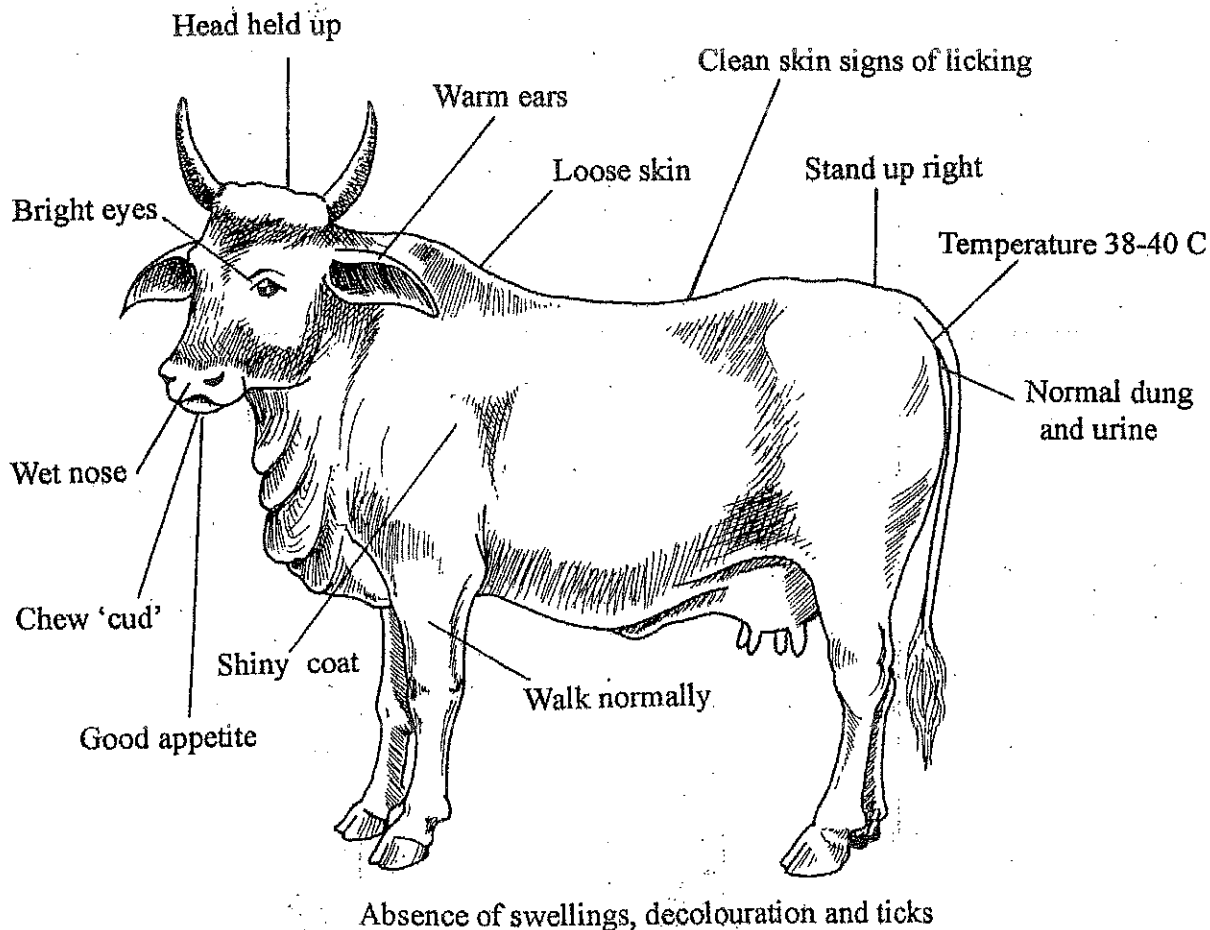


## IX. HEALTH AND DISEASES OF CATTLE IN VANUATU

### THE CONCEPT OF HEALTH

Health is a state in which all the body organs (parts) and systems are normal and are functioning normally. Any deviation from this normal state is termed a DISEASE.

#### A. SIGNS OF HEALTH IN CATTLE

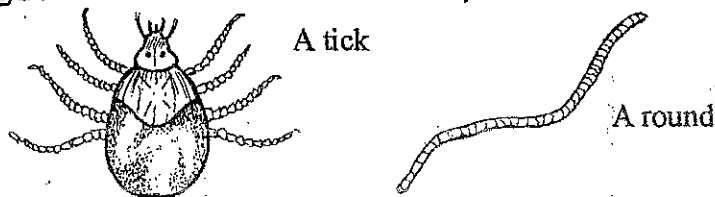


The farmer must check the health of his cattle regularly. Animals may be checked closely by passing them through a RACE and using poles to trap them if necessary.

B. SOME COMMON PESTS OF CATTLE

1. TICKS

Ticks are not found in Vanuatu but are abundant in neighbouring New Caledonia. Brahaman cattle are said to be resistant to ticks. Ticks are not insects - they are ARACHNIDS. Ticks have 8 legs. They are PARASITES and live on blood. They attach themselves to the skin of the animal, called HOST, pierce the skin and suck the blood. Besides sucking the blood, they spread serious diseases. Ticks are controlled by dipping or spraying. This must be done weekly to kill the eggs.



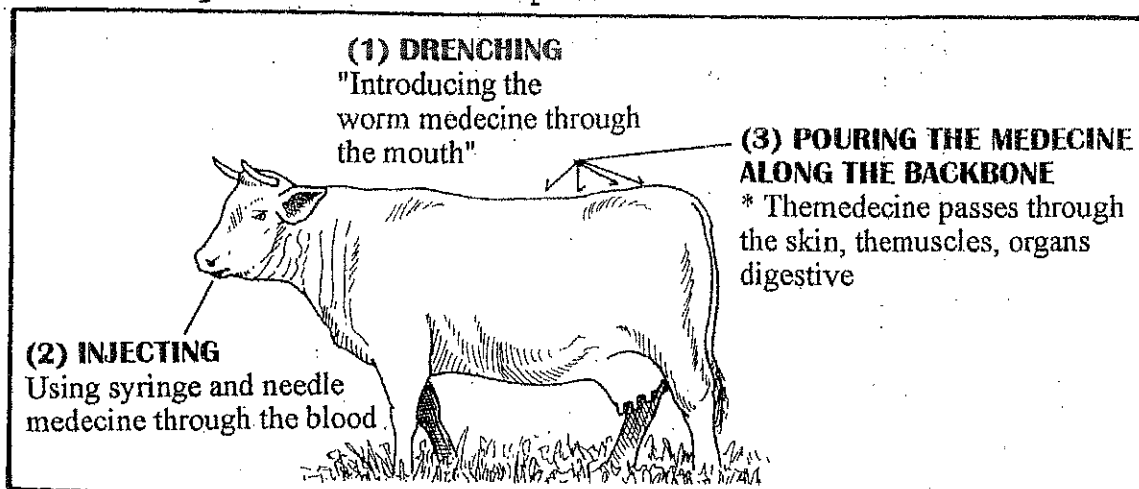
2. ROUNDWORMS

The long round worms are parasites living in the intestine. When they mature they lay eggs, which pass out in the animal's dung. They can easily be picked up by another grazing animals so that the infection spreads.

Symptoms : Cattle become thin and bony. The belly becomes big and cattle lose weight.

Control : 1. ROTATIONAL GRAZING helps to reduce the risk of infection. The eggs are killed.  
2. Worm medicine introduced inside the body of the cattle kill the worms and eggs.

In Vanuatu rotational grazing is not encouraged and there are ways by which the worms are killed. Injecting the worm medicine eg. NILVERM is cheaper.



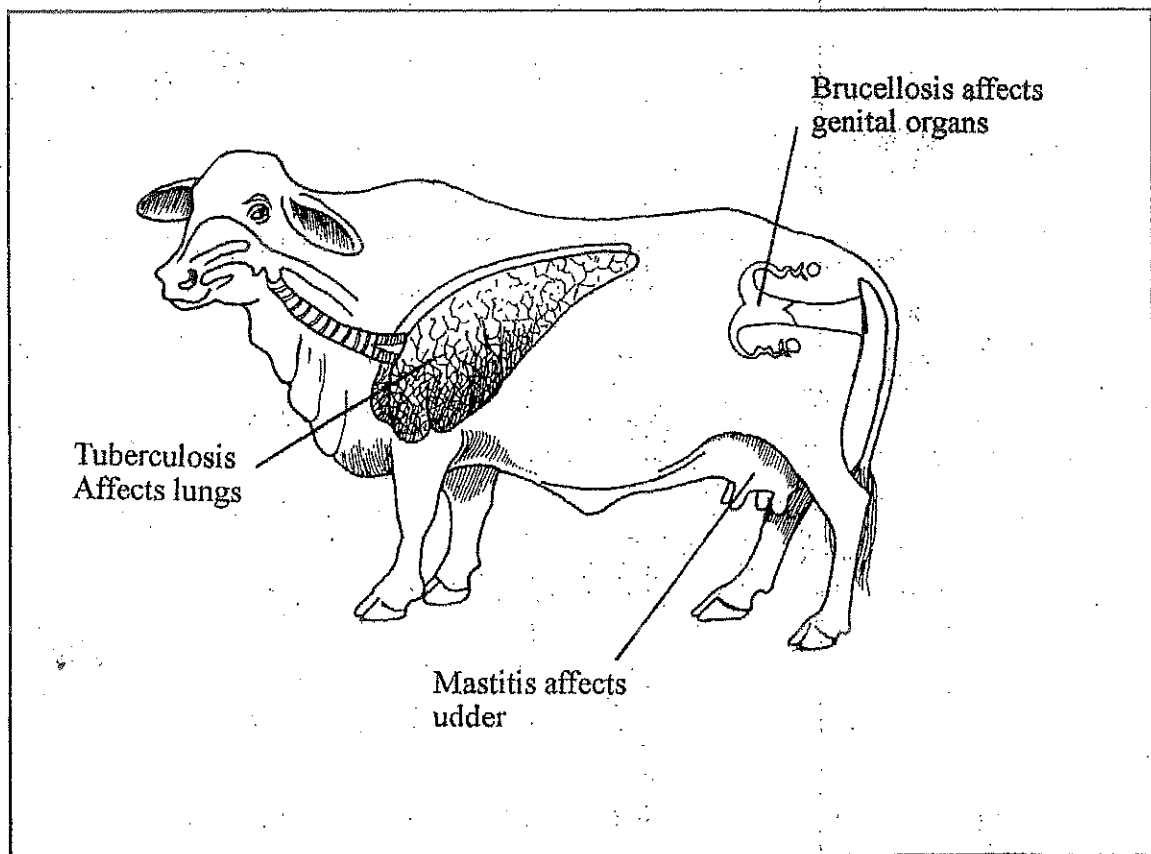
C. DISEASES OF CATTLE IN VANUATU

Diseases are caused by MICROBES i.e. Protozoa, Bacteria, Fungi and Virus. The 3 diseases of economic importance in Vanuatu are

- a. BRUCELLOSIS
- b. TUBERCULOSIS
- c. MASTITIS

BRUCELLOSIS is almost eradicated. The aim of the Livestock Department is to eradicate BRUCELLOSIS and TUBERCULOSIS from Vanuatu. One veterinary officer is working on the control of these 2 diseases. Also a law has been passed that a movement permit must be made available from a veterinary officer before moving an animal (cattle, pig or goat) from one place to another within an island or from one island to another.

An animal cannot be slaughtered and sold to the public without being checked and certified by a veterinary officer of the Livestock Department.





DISEASES OF CATTLE IN VANUATU

DISEASE	CAUSE	SIGNS	CONTROL
1. Tuberculosis TB	Bacterium	Loose coughs, discharge from the eyes, nose. Bony and loss in weight.	1. Testing animals for TB and keeping only those that are free of it.  2. Cull as it can spread to human beings.
2. Brucellosis 'contagious abortion'	Bacterium	Abortion (loss of foetus by pregnant females, followed by a slimy discharge).	1. Cull and slaughter also spread to human beings.  2. Vaccinate all females under 1 year old.
3. Mastitis	Bacterium	Swollen udder or teats in cows. These areas are painful. Pus or blood in milk.	Milk out the affected udder and put antibiotics through the teat canal. Clean and disinfect

With all the disease of cattle 'prevention is better than cure' so clean water, fenced pasture, regular deworming, dipping or spraying are necessary.

The farmer (herdsman) should always be on the look-out for signs of ill-health so that treatment can be given before it is too late.

X. CONCLUSION

Raising cattle is, nowadays, largely practiced by many farmers around the country.

In conclusion, the writer addresses this guide to the Agriculture teachers. Without going into details, he gives a general view over the questions which deal with cattle raising: Choice of breeds, reproduction (artificial and natural), pasture, cattle management and main diseases and pests.

A complete and practical guide intended to be an essential tool, for teaching, and also, for the student who wishes to raise cattle in the future.