



SMALLHOLDER GOAT MANAGEMENT MANUAL

HEIFER INTERNATIONAL ZIMBABWE

PREFACE

This manual gives a simplified, but all inclusive, outline of the technical aspects useful for the daily management of a small holder goat flock. It is largely based on the practical experiences on goat production in Zimbabwe. It is also based on the review of technical and research publications on goat production. The target audience for this manual is the literate smallholder farmer, the HPI trainer and Agricultural Extension Workers (AEW) working with HPI project groups and the generality of communal goat producers. The manual provides “**a quick field guide**” in point form. The major assumption is that the audience must have gone through some training, hence the mammal can not be, in any way, a replacement for the trainers or extension service provision. It is only a guiding reminder.

INTRODUCTION

There has been an increased interest and focus on the more drought tolerant small stock, goats in particular, after realising: the vulnerability of cattle to droughts, increasing cost of cattle, long production cycle for beef cattle versus the relatively low costs of goats, shorter production cycle, low feed requirements and high survival rates in drier parts of the country. More communities in dry areas have indicated interest in goat production hence requests for goat projects have been overwhelming. The provision of technical information through formal training of beneficiary groups has been the major approach in providing support services. Trained groups, trainers, and extension workers, however, need reference materials and the production of a field manual has remained imperative.

List of proposed practicals

- Dosing
- Dipping
- Castration
- Hoof trimming
- Dehorning
- Ear notching
- Dentition
- Pen construction
- Vaccinating
- Wound dressing
- Selection of breeding goats

IMPORTANCE OF GOATS

- Meat.
- Milk.
- Manure.
- Social status
- Payment/compensation for community crimes
- Income.

BREEDS

Mashona / East African type.

- Location: Dry Mashonaland North, Midlands and Zambezi Valley regions of Matebeleland North.
- Average doe live weight: 25kg.
- Average buck weight: 35kg.
- Twinning %: 20%.
- Kid weight at 12 months: 17-18kg.
- Coat: Multi-coloured (white, black, brown, beige, tan, combinations).
- Ears: Large, drooping.
- Body frame: Small, Medium.

Matebele type

- Location: Matebeleland south, Masvingo.
- Average doe live weight: 30-35kg.
- Average buck live weight: 45kg.
- Twinning %: 50%.
- Kid weight at 12 months: 25kg.

- Coat varies with strains including:
 - ❖ Westacre/Enyandeni Farms strain: Multicolour (black, white, brown, and combinations).
 - ❖ Blue goat: Blue-grey.
 - ❖ Iminwe: Black, brown/tan/beige.
- Ears vary with strains including:
 - ❖ Westacre/Enyandeni Farms strain: Large, drooping.
 - ❖ Blue goat: Long, lateral, drooping.
 - ❖ Iminwe: Long, drooping.
- Body frame: Medium, Large.

Boer Goat

- Coat: White with red head and neck.
- Ears: Large, drooping.
- Body frame: Large (almost twice the weight of Matebele goats).
- Twinning.
- Average doe weight: 50kg.
- Average buck weight: 65kg.

Angora goat

- Coat: White.
- Ears: Large, drooping.
- Body frame: Medium.

HOUSING

It is imperative for all goat-farmers to possess a pen for protecting their animals from predators and adverse weather conditions.

Siting:

- Gentle slope of the ground.
- Good drainage of the ground.
- Firm ground.
- Be leeward to the homestead.

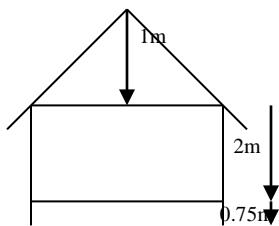
The pen should protect goats from:

- Draughts and colds
- sun and rainfall (roofing)
- predators

The pen must have:

- A feed rack.
- A kid pen.
- No sharp objects that could inflict wounds (rocks, wire, nails etc.)
- A raised floor of 1- 1.5metres above ground level to keep the goats dry.
- Slats in the floor to allow droppings and other dirt to fall through and to allow air to pass through.
- A strong secure door that can be locked to keep the goats inside.
- It must have watering trough and feeding trough which are easy to clean and easy for the goats to use.
- The house should be 2-3metres high.
- The required area per goat is $1.5m^2$.
- The above indicated area space can be reduced by 10% for every increase in the number of animals

The Standard HPI goat pen.





NUTRITION

Importance of food:

- Growth
- Reproduction
- Sustenance
- Body temperature maintenance/ heat
- Milk production and let-down
- Working and walking.

Poor nutrition results in:

- Poor reproduction through:
 - ❖ Late puberty
 - ❖ irregular oestrus cycle
 - ❖ Low twinning rates
 - ❖ Long kidding interval
 - ❖ Low birth rates
- Low viability and high mortality of kids
- Poor growth rates
- Poor milk yield
- High disease incidence
- Low slaughter mass

A good diet should provide adequate quantities of:

- Carbohydrates
- Fats and oils
- Proteins
- Minerals
- Vitamins
- Water

Watering and Feeding of goats

Ideally a goat needs 6-8 hours a day grazing and browsing.

Provide clean adlib especially when the goats have kids.

Veld management

- Do not overstock to avoid overgrazing
- Overgrazing reduces seed production and grass re-growth.
- It is essential to rest the veld
- Graze to control Top hamper (overgrowth)
- Control bush encroachment to promote grass growth

NB: Goats are 70% browsers and 30% grazers

- Fodder trees are very essential in the diet of goats.

- Farmers are therefore encouraged to establish browse-tree plots
- the ideal trees have the following characteristics
 - ❖ Fast growing
 - ❖ Easy to establish
 - ❖ Produce both edible leaf and pods
 - ❖ Multi-purpose (medicinal, fuel, fodder etc.)
 - ❖ Nitrogen fixing
- Tolerate heavy lopping
- Able to coppice well
- Drought tolerant
- Good soil binding and holding capacity

Ideal trees/shrubs include:

- Acacia
- Sesbania
- Leucaena
- Mulberry
- Moringa

Establishment:

- Seed should be planted in “pots”
- Seedlings will be transplanted to the plots when at least pencil-thick.
- Protection from termites and premature lopping is essential
- Frequent watering is also vital
- Mulching is always an important practice to reduce water loss.

N.B. Prioritise browse trees to lactating does and kids between 3-9 months old.

Supplementary feeding

Roughage (bulk feeds)*	Crop residues such as maize stover, <i>mhunga</i> and sorghum stalks, millet straws and <i>butu</i> . These supply energy. Hay supplies bulk energy and some protein.
Energy feeds	Cereal grains such as maize, sorghum and <i>mhunga</i> . <i>Masese</i> (beer residue) has a variable composition. Maize and sorghum need not be milled. Cobs or whole sorghum heads can be fed, <i>mhunga</i> must be milled.
Protein feeds	Legume residues are high in protein. These include cowpeas (<i>nyemba</i>), groundnut stalks, jack beans, velvet beans and round nuts or sugar beans. Pasture legumes that can be established by broadcasting include siratro, silver leaf desmodium, fine stem stylo and inturtum.

N.B. If grain is in short supply, it should only be fed to young animals to make them grow quickly and reach their productive stages earlier. With crop stover minimise leaf drop when cured, as this is the most nutritious part; store in a cool dry space to avoid deterioration.

* Prioritise draft animals in the case of cattle.

BREEDING

Selection of breeding goats

- **Benefits of selection**
 - ❖ High growth rates
 - ❖ High milk yield
 - ❖ Increased survival rates
 - ❖ Improved reproductive rates
 - ❖ Improved slaughter mass
 - ❖ Reduced disease and abnormality
 - ❖ Higher income
- **Selection strategies**
 - ❖ Assess genetic merit of individuals
 - ❖ Select a small number from large population (the best)
 - ❖ Use records as much as possible
- **Methods/tools of selection**
 - ❖ Castration
 - ❖ Culling
 - ❖ Selling-off
- **Does (females)**
 - ❖ Top-line with sharp vertebrae (withers should not have fat)
 - ❖ Long rump, not steep
 - ❖ Wide chest
 - ❖ Coat loose and pliable
 - ❖ Large barrel for feed and kids
 - ❖ Large heart girth
 - ❖ Strong, straight legs and strong feet
 - ❖ Strong muzzle for feeding
 - ❖ Alert eyes and ears
 - ❖ Good gait
 - ❖ Developed udder and vulva
- **Bucks (males)**
 - ❖ Cutability
 - ❖ Strong, straight back
 - ❖ Rump long, wide and level
 - ❖ Strong, straight legs and strong feet
 - ❖ Healthy, developed genitalia
 - ❖ Two rudimentary teats
 - ❖ Head medium and heavy
 - ❖ Use the mother's records like high twinning rates

➤ **Effects of inbreeding:**

- ❖ Reduced vigour
- ❖ Low genetic variation of bucks and their offspring
- ❖ Low growth rates
- ❖ Low milk yield
- ❖ Low slaughter mass

Farmers are encouraged to change bucks every 1-2 years, to avoid loss of hardiness and productive ability of indigenous goats.

➤ **The merits of cross breeding**

- ❖ Hybrid vigour is realised.
- ❖ High genetic variation of the buck and their offspring.
- ❖ High growth rate.
- ❖ High milk yield
- ❖ High slaughter mass.

REPRODUCTION

- ❖ This is the basis of continuity of a species, productivity of a flock and the profitability of a goat enterprise.

➤ **How to improve reproduction efficiency**

- ❖ Early breeding (8-10) months depending on management.
- ❖ Good plane of nutrition
- ❖ Early letting
- ❖ Supplement when letting late
- ❖ Good selection records.

➤ **Targets of reproduction efficiency**

- ❖ Does to first mate at 8-10 months.
- ❖ First kid at 13-15 months.
- ❖ Kidding interval of 7-8 months.
- ❖ 150 kids born out of every 100 kiddings. Twinning % of 50.

➤ **Oestrus cycle**

- ❖ 21 day frequency
- ❖ Mating occurs at heat, which lasts 1-3 days
- ❖ Observe Does from 17 days after mating for reoccurrence of heat
- ❖ For reoccurrence of heat suspect disease, low buck fertility, poor heat timing and poor nutrition.
- ❖ Mate at 3 months post-partum to check on success of conception.
- ❖ P.D. at 3 months post-mating, by observing the belly

➤ **Heat detection**

- ❖ Bull string

- ❖ Mounting and being mounted
- ❖ Restlessness
- ❖ Anorexia
- ❖ Vulva swollen and deep reddish
- ❖ Noisy

➤ **Causes of anoestrus (absence of heat)**

- ❖ Disease
- ❖ Poor nutrition
- ❖ Abnormality of the reproductive system.
- ❖ Poor body condition due to disease.
- ❖ Post-partum anoestrus. It is normal when it is within the first 50 days after kidding.

➤ **Preparation for kidding**

- ❖ Good record keeping allows for timely preparation (gestation is ±150 days)
- ❖ 2 weeks before kidding prepare the kidding pen which should be:
 - ✓ Clean
 - ✓ Dry
 - ✓ Well ventilated
 - ✓ With fresh bedding
 - ✓ Warm
 - ✓ Draught and rain protected

Close monitoring of the dam until it gives birth, however you may use these pens to separate pregnant dams at night.

N.B Browse from one months and allow full graze and browse by 6-7 weeks.

➤ **Signs of kidding**

- ❖ Enlarged udder
- ❖ Sunken hips, sides and tail head
- ❖ Stands aloof
- ❖ Paws the bedding
- ❖ Gives affectionate licks
- ❖ Heavy breathing and worry
- ❖ Vulva discharge
- ❖ Lies down looking back at its sides
- ❖ Heavy labour and water bag is exposed

➤ **Labour should be monitored from a distance and remember:**

- ❖ Remove troughs from the kidding pen to avoid drowning or injury of kids
- ❖ Do not disturb
- ❖ Birth is usually complete in an hour, if longer, investigate
- ❖ After-birth falls in 30 minutes to an hour, if it doesn't fall by the next day insert pessaries.
- ❖ Ensure the bond is established by licking
- ❖ Do not disturb the 2 for the first few hours

- ❖ Remove membrane from the nose (if not licked off)
- ❖ Dip navel in Iodine solution (Betadine) if available
- ❖ Ad libitum Colostrum for the first 3-4 days for maximum immuno-globulin and antibody uptake
- ❖ Have a clean, warm pen for the dam and kid, preferably with a raised floor.

➤ **Kid rearing**

- ❖ Do not milk in the first week
- ❖ Ensure kid feeds at least 3 times a day in the first week, and twice thereafter
- ❖ Milk in the morning only, judiciously.
- ❖ Browse supplement of 5% of body mass/day is important for kids between 3-9 months old.

➤ **Causes of kid losses**

- ❖ Dystocia
- ❖ Hypothermia; kills kids short of colostrum in one day
- ❖ Mis-mothering and starvation
- ❖ Diseases like White scour or Coccidiosis
- ❖ Predators

➤ **Dystocia:**

Kids should be born within an hour after hard labour begins. If this does not occur:

- ❖ Wash the doe off with a mild solution of soap and water.
- ❖ Clip your nails,
- ❖ Wash your hands with soap (preferably Life buoy)
- ❖ Lubricate with soup or cooking oil.
- ❖ Put it gently inside to find out what is going on
- ❖ Have someone to hold the goat if possible
- ❖ Shift the kid until it is in a normal birth position

ROUTINE MANAGEMENT PRACTICES

Dosing:

- this is done to control internal parasites which cause:
 - ❖ Lack of vigour especially in young animals
 - ❖ Poor irregular appetite and a decrease in body weight gains; animals become progressively thinner and weaker, leading to wasting
 - ❖ Anaemia, which can be identified by jaundice
 - ❖ Diarrhoea or scouring, or blood or mucous in faeces
 - ❖ Usually poor skin condition (dry skin and rough coat)
 - ❖ Droopy ears, self-isolation from the herd or flock and slow movement
 - ❖ Shortness of breath
 - ❖ Bottle jaw
 - ❖ Sometimes animals eat dirt or other substances not usually ingested.
- **Timing of dosing:**
 - ❖ Start of Winter (May, June); for roundworms
 - ❖ Start of Summer (November); for roundworms
 - ❖ Mid-summer (January); for wireworms
- **Remedies:**
 - ❖ Panacur sheep
 - ❖ Systamex
 - ❖ Tramisol lovol
 - ❖ Valbazen sheep
 - ❖ Tramizan
 - ❖ Valbantel
 - ❖ Ripercol
 - ❖ Banminth II solution
 - ❖ ICI liver fluke remedy

N.B There is need to rotate remedies to reduce resistance.

➤ Precautions to avoid Drenching Pneumonia:

- ❖ Be gentle and do not raise the head too much
- ❖ Insert the bottle or gun from the side of the mouth
- ❖ Do not pull out the tongue
- ❖ Slowly administer the remedy, allowing time for free swallowing
- ❖ Hold the animal firmly.

Dipping:

➤ Reasons:

The control of ecto-parasites is of economic importance because ticks and mites cause:

- ❖ Worry, therefore reduce feeding time leading to low production.
- ❖ Damage hides
- ❖ Tick borne disease e.g. heart water (Bont ticks)
- ❖ Reduced growth rates
- ❖ Low milk yield
- ❖ Poor reproduction

Chemicals include:

CHEMICAL	Application method/target ectoparasites
Decatix	Dip or sprayrace – tick, lice, tsetse and fly control for cattle, sheep and ostriches
Grenade	Dip or sprayrace – tick, and fly control for cattle; lice control in pigs; tick and lice control in sheep and goats
Spot On	Pour-on – tick, lice tsetse and fly control for cattle; lice control in pigs; lice and ticks in sheep
Supadip	Dip or sprayraces – tick, flea, lice and mange control for all livestock, dogs and horses
Taktic dip	Dip – tick, lice and mange control in cattle
Taktic Stock Spray	Sprayrace - tick, lice and mange control in cattle
Triatix D	Dip – tick, lice and mange control in cattle
Triatix Stock Spray	Sprayrace - tick, lice and mange control in cattle and dogs
Tick Grease	Tick control in cattle, sheep and goats

➤ **Precautions when dipping:**

- ❖ Do not dip when raining
- ❖ Dip when animals have been watered
- ❖ Use tick Grease or pour on dips for goats in late pregnancy, kids and weak animals
- ❖ Wet the entire body when using sprays or dips
- ❖ Animals should drip-off before going to the veld

Castration:

- **Reasons:**
 - ❖ Selection of breeders
 - ❖ Improve meat quality
- **methods:**
 - ❖ Burdizzo: from a month old
 - ❖ Rubber ring: first five days
 - ❖ Knife: 2 weeks to 2 months

Dehorning:

- **Reasons:**
 - ❖ To avoid tangling in bushes, fences and ropes
 - ❖ Prevent injuries
 - ❖ Improve appearance
 - ❖ *Do it when horn bud is visible using a dull-glowing iron.*

Treating wounds and abscesses

- ❖ Shave hairs that surround
- ❖ Wash out thoroughly with Life Buoy
- ❖ Make an upside down “T” incision
- ❖ Drain out all pus
- ❖ In the case of open wounds, cut off any dead skin with sharp scissors or blade
- ❖ Poke out Screwworms, if present and **kill them at once.**
- ❖ Wash out thoroughly with Life Buoy as well as methylated spirit
- ❖ Apply a relevant remedy from the following:

REMEDY	USE
EXIT	Treatment and prevention of Screw worms, and wound treatment
Healing Oil	Wounds, abscesses dressing
Stockholm Tar	Wounds
Eye and Wound Powder	Wounds and Ophthalmia
G and I	Wounds, abscesses

Foot care:

- foot problems cause lameness in Goats, this can be controlled by:
 - Regular inspection
 - ❖ Hoof trimming with Debudders or knife
 - ❖ Remove wires, nails, thorns that cause limping from the hooves.
 - ❖ Prompt treatment
 - ❖ Dry bedding in kraals
 - ❖ Foot baths:
 - ✓ Use 5% Copper Sulphate solution in a tin or dish
 - ✓ In the wet season dip hooves every week; dry season, every month

Dentition:

- I. Determining age is important for culling purposes or when purchasing animals.

TEETH	CLASS	YEAR OF LIFE
Milk	Kid	First year
Two-tooth	Yearling	Second year
Four-tooth	2 year old	Third year
Six-tooth	3 year old	Fourth year
Full mouth	4 year old	Fifth year

Identification:

- Ear notching
- Ear tagging

ANIMAL HEALTH:

- Common diseases include:
 - ❖ Heart Water
 - ❖ Pulpy Kidney Disease
 - ❖ Gid
 - ❖ Pneumonia
 - ❖ Anthrax
 - ❖ Botulism
 - ❖ Scours
 - ❖ Rabies
 - ❖ QE
 - ❖ FMD
 - ❖ Rift Valley Fever
 - ❖ CA
 - ❖ Acidosis
 - ❖ Bloat

ACTIVITY/MANAGEMENT CALENDAR FOR GOATS

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Remarks
1.Tick Control													Once /
2.Vaccination				QE	E				IPD	and CA			
3.Dosing													Select
4.Castration					Knife	Method							Budizzi of life
5.Dehorning													→
6. Hoof trimming													Examin Copper
7.Fodder preparation			Hay	CRC					FL				More e supple
8.Supplimenting fodder													Late su
9.Agro forestry unit establishment													Growing
10.Manure collection													
11.Culling													Done w
12.Marketing													Strateg
13.PKD													PKD v

KEY:

QE Quarter Evil
 IPD Infectious Pustular Dermatitis (Orf)