



A dairy goat production handbook for farmers

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Sustainable Development Goals	No poverty, zero hunger, decent work and economic growth, responsible consumption and production, sustainable cities and communities and life on land

Summary

Dairy goat rearing is very beneficial for farming families, apart from the milk which is very nutritious, goat meat is also a delicacy for many households. Goats can also be used to provide manure for the farm and also earn the farmer more income. With limited capital a farmer can start a dairy goat project and be able to reap benefits from it within a short time.

Description

1. Why keep dairy goats

1.1 Goat's milk is good! Goat's meat is tasty!

- Goats Milk is easy to drink and is a richer food because it has more calcium, phosphorous and chlorine than cow's milk.
- Milk is used at home so that the family get the best milk - if there is a cow many farmers will sell the cow's milk for cash and make sure the family gets the goat milk to drink!
- Tasty Meat! Goat's meat is very tasty and it is juicy and eaten often by many people
- More and more people are learning about how good goat's milk, cheese and yoghurt are so there is a growing market
- Goat's milk is better for the family as it has a "High Nutritional Content." This means it is a very high quality food and very good for young and old.

- Some people cannot drink cow's milk. They have an "allergy" to it. This is why some children are reared on goat's milk when cow's milk and all else has failed. Nobody is allergic to goat's milk!

1.2 Make more money

- Get cash from selling milk;
- get a higher price for goat milk;
- get kids every year (twice per year) and sell them easily when ready;
- kids can be twins/triplets;
- with small farm sizes it is a better way to earn money and feed the family;
- in the space and using the same feed you need to keep a cow you can keep six goats;
- goats do not need big areas to graze like cattle;
- farmers can pay school fees using income from sale of milk/manure;
- resulting products are fast and easy to sell;
- goats sell easily for meat,
- many people prefer goat cheese;
- start getting benefits quickly;
- goats use small doses of drugs - cheap and easy to maintain;
- good for people who do not have a lot of money to start with; and
- goats make very good manure.



Figure 1. Comparison of goat milk, cow milk and human milk content

	GOAT	COW	HUMAN
Protein %	3.0 *	3.0	1.1
Fat %	3.8	3.6	4.0
Calories/100ml	70 *	69	68
Vitamin A (i.u. /gram fat)	39 *	21	32
Vitamin B (UG/100 ml)	68 *	45	17
Riboflavin (ug/100 ml)	210 *	159	26
Vitamin C (mg ascorbic acid/100 ml)	2	2	3
Vitamin D (i.u. /gram fat)	0.7 *	0.7	0.3
Calcium	0.19 *	0.18	0.04
Iron	0.07 *	0.06	0.2
Phosphorus	0.27 *	0.23	0.06
Cholesterol (mg/100/ml)	*Low is good	15	20

*Shows the best nutrition

Source: FARM Africa 2010

1.3. Goats are good for the farm

- Less feed is needed to keep a goat than a cow;
- goats will eat many different plants - so they are easier to keep fed through the year;
- droppings are used as manure for organic farming;
- goats are good at keeping bush under control - they stop too much shrub growth;
- goats will live even where there is a drought as they do not need a lot of water and can go for quite a long time without water in very dry times.

1.4 Goat rearing do not require so much work

- Goats require less labour and time per head compared to cattle.

Figure 2. Goat waste as manure



1.5 Important for Social events

- Goats are used traditionally as payment of dowry;
- goats are often eaten during land cases, parties, clan meetings, etc.;
- goats are important in some rituals, they are used during circumcision ceremonies for example; and



- goat horn and bone are used in the traditional craft industry.

Figure 3. Goats are used in social events



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2. Housing the goat

2.1 Good goat house will make keeping goats easier

A good goat house should be:

- rain proof;
- damp proof;
- well ventilated;
- free from direct wind;
- free from sharp objects that might cut the goat;
- pest and wild animal proof;
- slats on floor for free fall of droppings; and
- with an area of at least 2 meters per animal.

If you build a goat house like the one shown then you will:

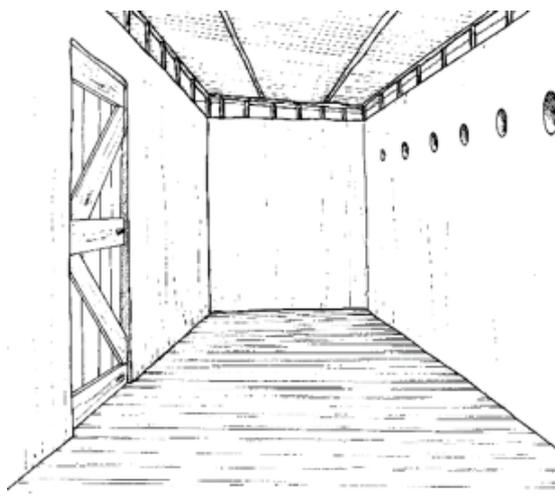
- make sure Animals do not get sick very often;
- you can make sure that only the animals you want to breed do so;
- make it very easy to feed;
- stop wasting feed;
- save the goats wasting energy and increase the amount of milk you get; and
- keep goat's feet dry and clean all the time.

2.2. Types of Houses

At the beginning of the project it's assumed the farmer is working on a limited

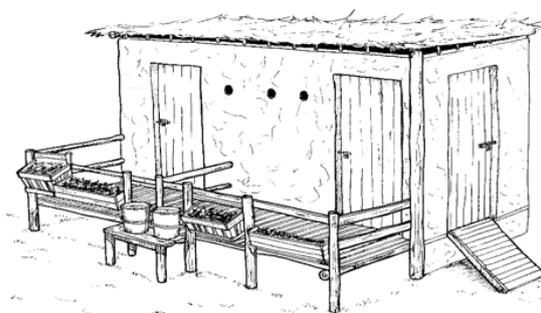
budget so construction of a simple house but comfortable house for the goats is recommended. The house can be built using local material

Figure 4. Proper housing for the goat: Inside



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Figure 5. Proper housing for the goat: Outside



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2.2.1 Mud houses

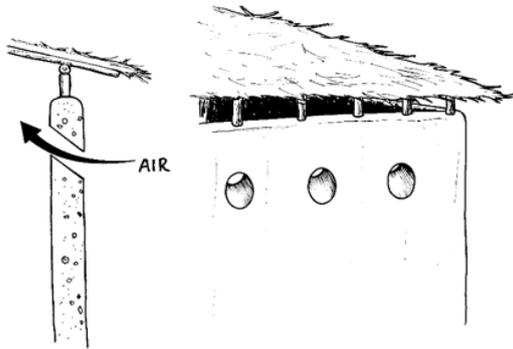
This is the cheapest house to build because it uses local materials:

- posts;
- mud;
- rafters for floor;
- nails; and
- grass for thatch roof.

When placing mud, make holes in the wall slanting down so that, the air does not land directly on the goats.



Figure 6. Mud housing



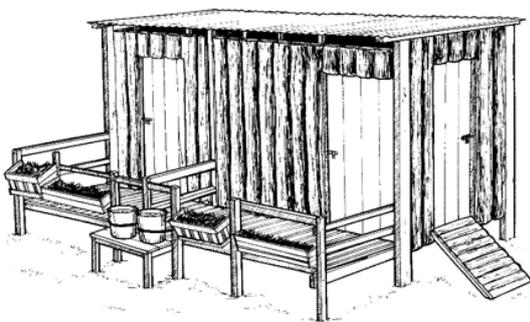
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2.2.2 Off-cuts houses

This house costs a little more but it will last longer. Materials:

- posts;
- off-cut planks;
- nails;
- iron sheets or grass for thatching; and
- wood - rafters or planks for the floor.

Figure 8. Off-cut housing



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2.3. The house

There are two main areas of the house, the sleeping area and feeding area.

2.3.1 Sleeping area

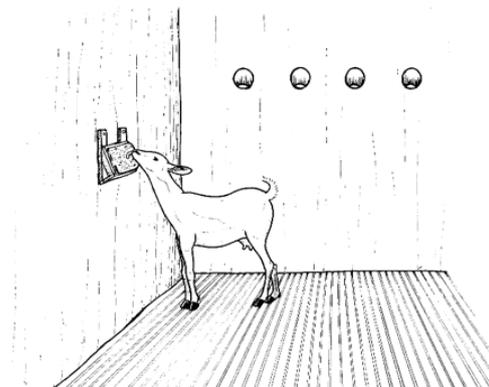
- Wall right around - with a door;
- it must be roofed; and
- lots of air allowed in (well ventilated).

2.3.2 Feeding area

- Open not roofed, goats need some sun;
- fence right around with a door/gate;

- feed trough/water area;
- place for hanging fodder [feed racks];
- floor with slats to let manure fall through that keeps feet and animals clean and dry; and
- place to hang mineral block (placed where it cannot be rained on).

Figure 7. Sleeping area of the house



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2.4 The house parts

2.4.1 Floor

- House should be raised 1.5 feet (or just below knee height) from the ground.
- A slatted wooden floor is very important. This has small gaps - about half an inch wide (or the width of a side of a match box) between the planks or rafters.
- Use of local materials means you can use off cut planks, etc.
- The floor racks made of rafters should be put where the goats feed and sleep, this stops foot rot when it is wet, keeps the house clean and dry.

2.4.2 Feed trough

- the feeding area, built 1 meter (3 feet) above the platform;
- make with rafters, must be easy to clean through;
- floor of trough can be made of off cuts; and
- must be able to hold hay.



2.4.3 Water trough

- Be placed 1 foot above the floor in the feeding area;
- hang a 5 liter can on the door to the sleeping room; and
- the door should have a small window so that goats can have access to water - day and night.

2.4.4 Kid pen

- Toggenburgs often give birth to twin kids so don't make the pen small!
- Kid pen should be for at least six kids; and
- be half the area for the four does, i.e. 4 m².

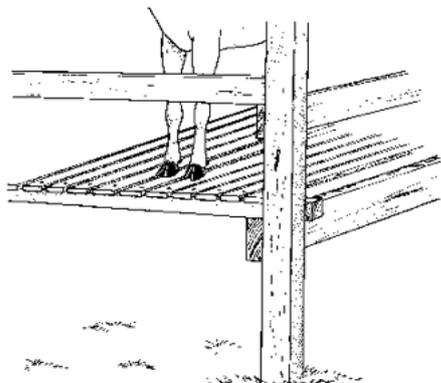
2.4.5 Hay barn/store

To store fodder, for use during the dry season, build a store adjacent to the goat house that is roofed to avoid hay being rained on.

2.4.6 Mineral trough

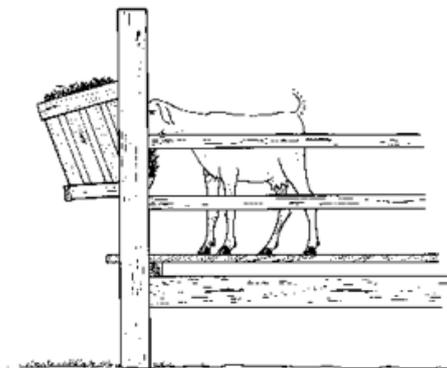
- Should be made where the goats sleep.
- A 1 foot square box is ideal for the purpose. A halved long ways plastic container nailed to a board, at least 1 foot wide can be useful, or just as good, hang the salt so the goat has to reach for it.

Figure 9. The floor



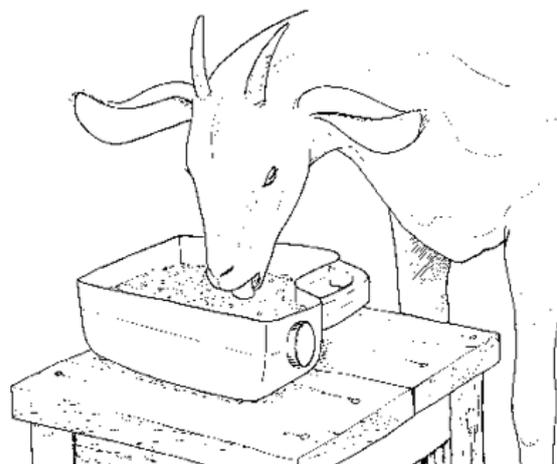
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Figure 10. The feeding trough



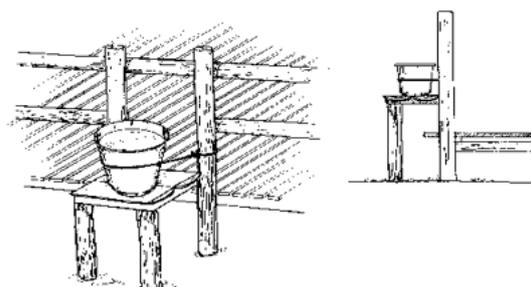
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Figure 11. The mineral trough



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Figure 12. The water trough



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3. Feeding the dairy goat

3.1 How does a goat like to eat?

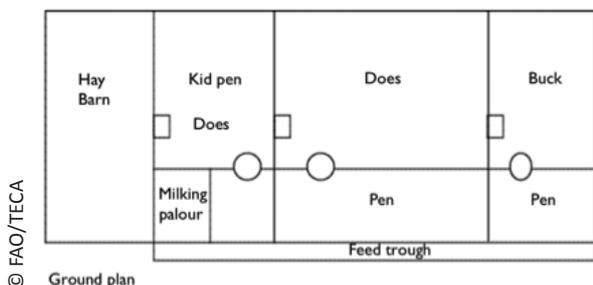
A goat does not like to graze on the ground like a sheep or cow. Goats like feeding at knee height up to head height. So they like to feed above the ground often standing on



their hind legs and resting their fore legs up on the bush or goat house wall.

Goats need to be able to drink fresh water at all times.

Figure 13. The ground plan



3.2 Advantages of stall feeding

- Does not need a large amount of land and no grazing pastures;
- can use many farm products, banana leaves, maize, maize thinning, bean husks, etc.;
- saves time and labor, do not have to take goats out of the farm for grazing or spend time looking for them;
- less death amongst the kids and all goats because they can be easily looked after throughout the day;
- easier to plan and manage breeding;
- keeps goats from eating crops and damaging the farm;
- makes collecting manure very easy; and
- helps in controlling diseases.

3.3 What do they eat?

- They eat a lot of different plants/feeds. But they know what they want to eat.
- They prefer some plants/feeds to others.
- They even prefer different parts of the plant so they will eat leaves and flowers and not pods or stems, within the same plant.
- They get bored when fed the same feed every day.
- They can be wasteful. Only eating some of

the plant. For example give n un-chopped feeds like napier grass they pull it out of the ground, eat the leaves only and do not eat the stem.

- Goats are clean feeders, and will not eat dairy feeds which are not fresh nor dirty feed e.g. napier with mud splash from rain.
- Goats do not like sticky, mouldy, wet dusty feeds.

3.4 The best way to feed goats

- Feed only clean, fresh and dry fodder;
- always have fresh water for goats to drink at any time;
- clean the feeding trough and water bucket every day;
- give lots of different feeds such as grasses and legumes, tree leaves and fresh kitchen remains;
- give chopped mixed feeds to make sure the goats eat everything and do not waste feed;
- feed goats at least three times a day and at the same time every day; and
- put some feed in the feed trough or rack or hang up some feed to be eaten overnight.

If you use molasses to make feed taste better do not use too much it will make feed sticky

- Dusty feeds and concentrates should be wetted a little;
- provide fresh and clean water daily. There should always be water in the bucket;
- give mineral Lick [block] always to all goats;
- feed desmodium if too much leguminous feed is fed;
- mix feeds with grass, hay, straw or napier to balance; and
- only feed lucerne one-third of the days, as it can poison the goats.



3.5 Feeding different goats

Remember all goats must have fresh water whenever they need it.

3.5.1 Feeding sick goats

- Feed goats well when ill as good feeding will give strength;
- small, weak, young and sick goats should be fed separately; and
- follow the best way to feed goats carefully and handle gently.

3.5.2 Feeding mature goats

Mature goats should be fed on whatever feed there is - enough to keep well and keep the animals weight.

3.5.3 Feeding the buck

- Feeding should be enough to keep its weight steady but not too fat as a fat buck will not be active.
- Give more feed two months before the buck has to serve the does as this will improve the bucks' sperm and make it more active.
- When a buck is being used a lot to serve does, it should be separated from other goats for about 2-3 hours per day. This will allow it time to eat as well as serve the does.
- Lots of fresh and clean water needed all the time.
- Must be able to lick the mineral lick at any time.

3.5.4 Feeding does

- Concentrates should be fed to does just before the does are served by the buck;
- increase feed gradually for two months up until the doe gives birth; and
- Continue feeding concentrate while she is giving milk.

The doe needs careful feeding in order to:

- keep its normal weight up;

- be fertile when served so as to get twins (Flushing);
- carry the kid while it is pregnant;
- give milk to its kids; and
- give extra milk for farmers' use.

3.5.5 Feeding the breeding and lactating doe

- One month before mating the doe should be fed and watered very well so as she is in the best of health.
- If she is very well she is more likely to have twins or even triplets
- Mineral licks hasten coming on heat
- Give lots of water at all times

3.5.6 Feeding during pregnancy

During the first three months of pregnancy, the goats need to be fed as normal and to be sure that she is healthy. During the last two months of pregnancy

- the goat must be fed well with high quality feed;
- the " fetus" or kid inside does nearly all it's growing in this period; and
- there may be twins or triplets and they will need lots of good food to grow.

3.5.7 Feeding kids

During the first three month:

- newborn kids should suck colostrum within 24 hours and then should be with the doe and allowed as much as they need;
- at one week, kids should be provided with small quantities of good clean feed e. g . sweet potato vines, tree legumes leaves or natural tree leaves; and
- kids should continue with milk for the first three weeks, and thereafter be allowed milk with fresh mixed fodder up to three to four months.



3.5.8 Feeding young stock

- Should be fed on fresh, highly nutritious mixed fodder;
- give lots of water at all times;
- provide lots of water; and
- mineral blocks must be given at this stage.

3.6 What kind of feed should the goat be given?

The dairy goat gives as much milk as it is given the right food!! There are many feeds the goat likes. Here are some good feeds that can be used.

3.6.1 Sweet potato vines

- This is a very good feed that goats like very much.
- It is a good crop to plant because it gives tubers for the family to eat and the leaves can be fed to the goats.
- It can be planted beside river beds, steep parts of the farm and roadside edges.
- It is useful in feeding kids whose mothers die early in their life.

3.6.2 Napier

- Plant napier along river beds, along soil terraces, road reserves, etc.
- Where a farmer has a big farm, then plant as one crop near the home to save time and work when taking to the goats.
- Good napier needs manure and top dressing with a fertilizer, and it needs weeding.
- Where new fields are being planted, mixed cropping with desmodium improves the quality of the fodder.
- If you plant Napier around your maize, it stops Maize stalk borer!
- Cut Napier often so it is easy for the goats to eat and digest

3.6.3 Fodder trees and legumes

- These have lots of protein and you need only feed a little at a time.
- These are for example: *leuceana*, *calliandra*, *sesbania* and *desmodium*
- The trees and legumes, should be planted along the fences and terraces. For example, *leuceana* is good in fences
- Good legumes are potato vines, which do not need a lot of work once they are growing.
- *Desmodium*, when available, should be inter-cropped with Napier
- *Calliandra* does better in high altitudes (tea zones) than *leuceana*.
- Do not forget that many weeds also make good fodder.

3.6.4 Maize

While maize is grown for farmer's food, there is a lot of fodder which can be used for feeding the goat which will not stop the farmer getting a good maize yield.

- Thinning: all the extra maize seedlings that grow from the same seed hole should be thinned and dried a little before feeding to the goats.
- Remove extra leaves - this should start with the leaves below the cobs as soon as the cob can be seen.
- Cutting the tops - this should start after the grains have hardened.
- Stover - these should have sweeteners (molasses) added or sprinkle common salt after chopping.
- Broken grains - these are very nutritious especially after a heavy harvest but should be fed carefully to avoid grain overload



4. Kidding

This is the birth of young goats - Kids. It takes 5 months for a goat to give birth after it has been served, by a male.

4.1 Preparation for kidding

There are three very important rules for kidding.

4.1.1 First rule

Ensure the kidding Doe is put in a dry clean and quiet place at the time of kidding.

4.1.2 Second rule

The kidding place should be under a shelter (in the house) or shade. This is to protect the kid from too much sun.

4.1.3 Third rule

The Doe must have water as soon as she has given birth so she can make sure she has enough to balance the loss of water from giving birth and to have enough milk to feed the new born.

Kidding should be done where you can see what is happening easily and often.

4.2 Signs of kidding

- Enlarged vulva;
- restlessness of the doe;
- doe seeks a quiet place free from goats;
- udder is enlarged, full and firm;
- muscles either side of tail will become sunken and on either side of tail hollow appears;
- often stand or lie down and stretch her neck pointing her head skyward; and
- will have a clear discharge from the vulva.

4.3 Kidding process

- Keep the kid in a cool dry place away from too much heat and draught;

- disinfect the navel immediately using disinfectants e.g. dettol or tincure of iodine;
- ensure kid suckles colostrum within 20-30 minutes after birth;
- stimulate mother-kid bond by encouraging mother to lick the kid; and
- in case of breathing problems, help by tickling the tongue, and removing all mucus from the nostrils

4.3.1 Helping the doe during kidding

Try and make sure everything is as clean as possible.

- Normally goats do not have problems giving birth or kidding but sometimes a kid may get stuck during the process of birth.
- If you need to help, then be sure that before doing so, that you wash hands with Dettol, make sure nails are cut and remove any jewelry - like rings.
- If you can get proper plastic gloves use these to protect yourself and the goat from infections.
- When helping kids to be delivered be gentle and make sure you understand the problem before exerting any force.
- Be careful when pulling the kids legs that the head is forward and down.
- Be careful that you are dealing with one kid at a time and not holding one foot from two kids.

4.4 Care of orphans

- Foster orphans to docile does or bottle feed with other goat milk or milk replacers.
- You may use sweet potato vines to feed orphans.



5. Husbandry techniques

Once the kid is born there are a number of things to be done.

5.1 Disbudding

- This is removal of very young horns that have not grown.
- It is usually done first to second week of age.
- It should be performed by a vet using a hot iron under general anesthesia using a drug called SAFFAN.

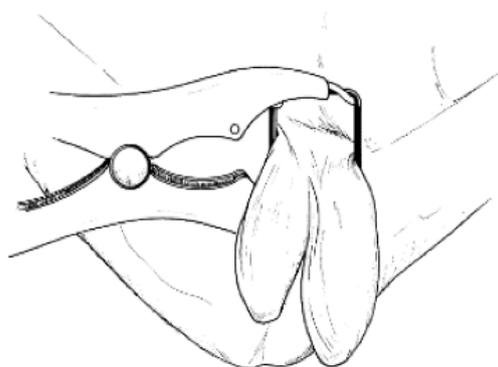
5.2 Castration

- Male goats that will not be bred should be castrated early in life (in the first 2 months) and kept for meat.
- Can be done by use of rubber rings, burdizzo castrator, or open methods.

5.2.1 Rubber rings A2

- Using an applicator, insert the rubber to the testis as shown, make sure it is as high as possible; and
- make sure the testis are in the scrotum below the ring and release carefully.
- This can be done on farm after a little practice.

Figure 14. Application of the rubber ring

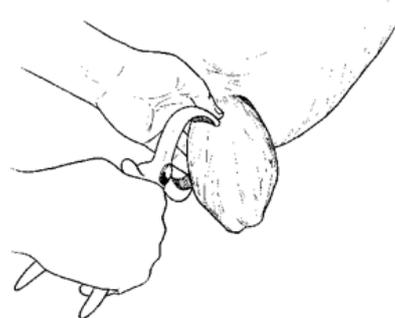


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5.2.2 Burdizzo B2

- Hold the spermatic cord with your fingers right at the top, one testicle at a time.
- Clamp the Burdizzo on one cord and press the levers to snap it. Repeat for the other testicle.
- Kids should continue with milk for the first three weeks, and thereafter be allowed milk with fresh mixed fodder up to 3 - 4 months.

Figure 15. Burdizzo



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5.2.3 Open methods?

- It's a complete removal of testis by an operation.
- This is an operation that you can request your vet to perform for you in cases of trouble.

5.3 Identification

Farmers need to be able to identify their animals so they can keep records and easily know the age, breeding and usefulness of each animal. This can be done through:

- tattooing;
- ear tags;
- paint or ink;
- branding; or
- other marks or names.
- Extension staff can demonstrate this to farmers interested.



- Useful in feeding kids whose mothers die early in their life.

5.4 Other managerial practices

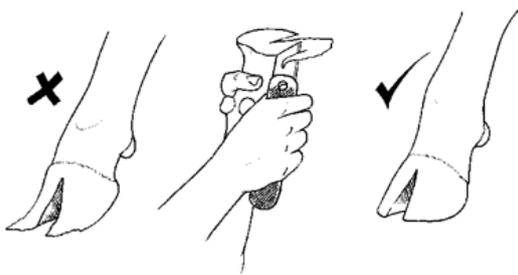
5.4.1 Weaning - removing kids from its mother

- Usually done at two to three months of age.
- Let kids try hay and grains early in life to strengthen their stomachs.
- When you start to wean young goats they will begin to feed on solid food. So they will begin to pick up diseases such as Coccidiosis.
- When kids start eating fodder they will suffer high worm infection so they need to be dewormed after exposure.
- When given concentrates kids are likely to suffer Enterotoxaemia so you will need to vaccinate against these diseases
- Don't stop feeding milk suddenly but this should be gradual to avoid indigestion or bloat.

5.4.2 Hoof trimming

Do not let hooves grow longer than shown below, cut and trim carefully.

Figure 16. Hoof trimming



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6. Milking

6.1 Keeping milk clean

The most important thing to do is keep yourself, your hands and buckets, clean. Also carefully clean the doe's udder.

6.1.1 Milking shed

The milking shed should be cleaned after each milking and disinfected.

6.1.2 Human infectious diseases

People who are ill should not milk.

6.1.3 Washing hands

Before starting milking, the milker should wash his hands, arms with soap and hot water, or disinfectant. Also, keep finger nails cut and clean.

6.1.4 Wash udder

- Before milking the udder should be washed with clean water which has disinfectant added to it.
- Use two cloths alternatively for washing the udders. Leave one in the disinfectant whilst the other is in use.

6.1.5 Cut out bacteria

The first drop of milk from each teat should be thrown away as it has a very high bacterial count.

6.2 Hand milking

- Good milking is done by the squeeze method.
- Avoid the pulling technique as it hurts the udder and the teat and udder will get a mastitis infection.

6.2.1 The squeeze method of milking

- Take hold and squeeze the base of the teat with the thumb and forefinger to trap the milk in the teat.
- Close the other three fingers squeeze downwards in turn.
- The milk in the teats is squeezed downwards and not pulled.
- Squeezing slowly downward makes the milk come out. Repeat this in a rhythm and quickly-using the full hand to avoid finger and thumb striping.



- This should take about 7 minutes. So be quick so that you get as much milk as possible

6.2.3 Other important dairy goat precautions during milking

- Always house/pen the doe and the serving buck in different pens to prevent smell in the milk.
- Make the milking parlour far from the buck pen.
- Wind direction should be from milking parlour to the buck pen and not vice versa.
- Always be calm, friendly to the doe and milk at the same time every day.
- Maintain similar milking position (Back position or side position).
- The nails on the hand of the milker should be short.
- Measure and record your milk immediately.
- Wash milk equipment with hot water rinse and dry on a rack immediately after milking.
- Avoid giving feeds with strong smells just before milking and during milking e.g. silage, pineapple, waste, etc. to avoid tainting the milk.
- The hair on the flanks and around the udder should be trimmed regularly and the goat brushed occasionally.
- Use of sprays/oils/soaps with smell by milker will taint the milk.

6.2.3 After milking tips

- Irregular milking can lead to low yields and increased chance of mastitis.
- The kid should be allowed to suck the milked teat after milking for proper emptying of teat canal.
- After milking use a teat dip containing a suitable antiseptic e.g. tincture of iodine.

- If possible same person should milk always

6.2.4 Mastitis

- Goats with mastitis should be milked last to prevent the spread of the infection to other goats.
- Mastitis can reduce yields by at least 10 percent.
- Milk from sick goats, especially goats with mastitis should not be sold but be discarded.
- Isolate the goat with mastitis.
- Sick animals must be treated.

6.2.5 Dry off a doe

If a doe has been served and is pregnant - special care is required during the 4th and 5th month as the embryo's gains weight rapidly.

- The does should be housed alone to avoid disturbance by the other goats.
- The doe is dried gradually, i.e. milking is done normally, but the amount milked at every subsequent milking is reduced gradually until finally stopping.
- This prevents development of milk clots.

7. Breeding

7.1 What type of goats are available

- Farmers keep local goats. They have been keeping these goats for many years. These goats however do not produce enough milk for their kids and extra for human consumption.
- Goats can be classified as dairy or meat type.
- The local goats are mainly meat types, East African and Galla.
- The local goats can survive and thrive in the hot climate, low quality forages and fodder and to some extent resistant to common diseases.
- This makes them produce very little milk.



- The dairy types include the following Toggenburg, Saanen, Alpine, Anglo-Nubian.
- Dairy type goats produce a lot of milk but do not adapt very well.
- These dairy goats are normally mated to local goats to get a goat that is “a better milk producer” than the local goats but which are easier to raise than the pure dairy types. The mating of two different type breeds of animals is called crossbreeding.

7.2 What can be done to improve the productivity of the local goats?

- Feed them properly with different grasses and shrub browses;
- keep them in a properly built goat house;
- give them good husbandry, treatment;
- cross breed them with improved goat breeds like Toggenburg; and
- keep records to help you in knowing and managing your goats.

7.3 Why should farmers keep dairy goats

- Farms are becoming smaller as each new generation inherits land.
- Goats can be kept on small pieces of land.
- Goats can be fed on farm by products.

7.4 Why breed your goats

- Breeding helps the farmer to have more animals.
- With good breeding you get more and better animals.
- Good breeding means a farmer has to know his animals and take good care of them.
- A farmer can know his / her animals by keeping records on his / her animals and the events taking place.
- Animals of different ages need different attention.

- Does, bucks and kids should all be given good care appropriately

7.5 Taking good care of dairy goats

- Well-fed and healthy parents give good offsprings;
- both does and bucks must be well-fed and cared for before becoming parents;
- keep does and bucks apart;
- allow mating to occur at the right time; and
- keep a record of dates.

A doeling comes into heat at four to five months of age therefore must be raised apart from bucks from four months.

- You should mate your doe when it is over one year old.
- To get good results a farmer must control his goats.
- First mating will depend on age and condition of the goat.
- Mating before one year should only be allowed before and during pregnancy.
- It is recommended that a doe should be bred when she each 75 percent to 80 percent of its mature weight
- For milking does, they should be bred after the third month of kidding.

7.6 When should you breed your does?

A goat can only be bred when she is ready. This condition is referred to as “the goat is on heat”.

7.6.1 What are heat signs

- The goats become restless and mount each other;
- cry loudly and sometimes bleating;
- the vulva may become swollen;
- the goat wags the tail;
- frequent urination; and
- it lasts two to three days.



7.6.2 When to mate

- A doe should be mated 12 to 24 hour after you have seen her on heat.
- Heat signs in the afternoon, the goat should be mated the next morning.
- Heat signs in the morning, should be mated in the evening.

7.7 Avoid mating goats that are related

When goats that are related are mated this is called inbreeding.

- Inbreeding should be avoided in animal production.
- Inbreeding results in weak offspring, decreased productivity e.g milk and even death.
- Bucks should therefore be rotated or moved from their stations after one and half years.
- Keeping good records will help a farmer to know which animals are related and which ones are not.

8. Keeping Records

8.1 Keeping records

- helps you to know your goats;
- recording increases animal values and therefore sales income;
- recording promotes increased milk yields;
- recording promotes improved genetic merit; and
- helps you to manage your animals well.

8.2 Which records to keep

A farmer should keep simple records of

- Birth dates
- Birth weights
- Sire and dam
- Milk records
- Treatment records
- Service dates

Good record on service date will help you calculate the expected date of birth after

breeding. You can know the expected date by counting five months from the date of service and take off three days.

9. How can you know your goat is pregnant after mating?

- three weeks later the doe is not on heat;
- eight weeks later the vulva shows an enlargement; and
- twelve weeks later the abdomen enlarges noticeably.

Abortions in goats are not common, but can be avoided by protecting the doe against difficult situations keeping the does well fed and disease free. A pregnant doe should be dried up three months into its pregnancy.

9.1 Signs of approaching birth

- A few days before there will be discharge for the vulva.
- On the day of kidding, the doe bleats, paws the bedding and becomes restless.
- With proper feeding and management, goats normally give multiple births.

9.2 Sick goat: How to identify

- Sick goats stand apart from the others in a group (animals about to give birth also behave like this);
- they are restless;
- do not lie down and rest even when others in their group do so unless it gets very ill;
- hold their head down;
- have dull eyes and show little interest in their surroundings;
- often have rough coat and look weak and tired; and
- do not like to be fed.