

GOAT PRODUCTION AND COMMERCIALIZATION



PARAVET MANUAL



RESEARCH PROGRAM ON
Dryland Systems






Enabling poor rural people
to overcome poverty



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WHO THIS MANUAL IS INTENDED FOR AND HOW TO USE IT

This manual was developed to help community animal health workers or paravets to transmit important information on goat production and commercialization to goat keepers.

Paravets can meet with a small group of goat keepers and talk about goat production with the support of this manual. It has a number of drawings (sheets) with related text on the most important issues to discuss regarding production and commercialization.

The paravet starts the session by showing an image to the goat keepers who then say what they see. From there, the paravet starts asking questions that the goat keepers answer and, if necessary, the paravet will complete or correct these answers.

The objective of the manual is to improve the knowledge of goat keepers regarding production and commercialization. In addition, it allows the paravet to interact with the goat keepers and help them with some of the challenges of goat production.

This manual was developed as part of the imGoats Project, implemented by CARE and ILRI, and funded by the European Commission through the International Fund for Agricultural Development (IFAD). The content of this manual was adapted from the *Guide for Veterinary Paravets from the Non-Governmental Organization* by VetAid.

The images used were made by Birgit Boogaard (ILRI), with the exception of the one of the parasites (sheet 3), the well-built male and doe (sheets 8 and 9), the doe with kids (sheet 10) and the kids (sheet 11), which are from the Heifer manual *Raising Goats for Milk and Meat*; and of the castration tool (forms 8 and 9) which is from the Agromisa Foundation manual *Goat Breeding in Tropical Regions*.

June 2013



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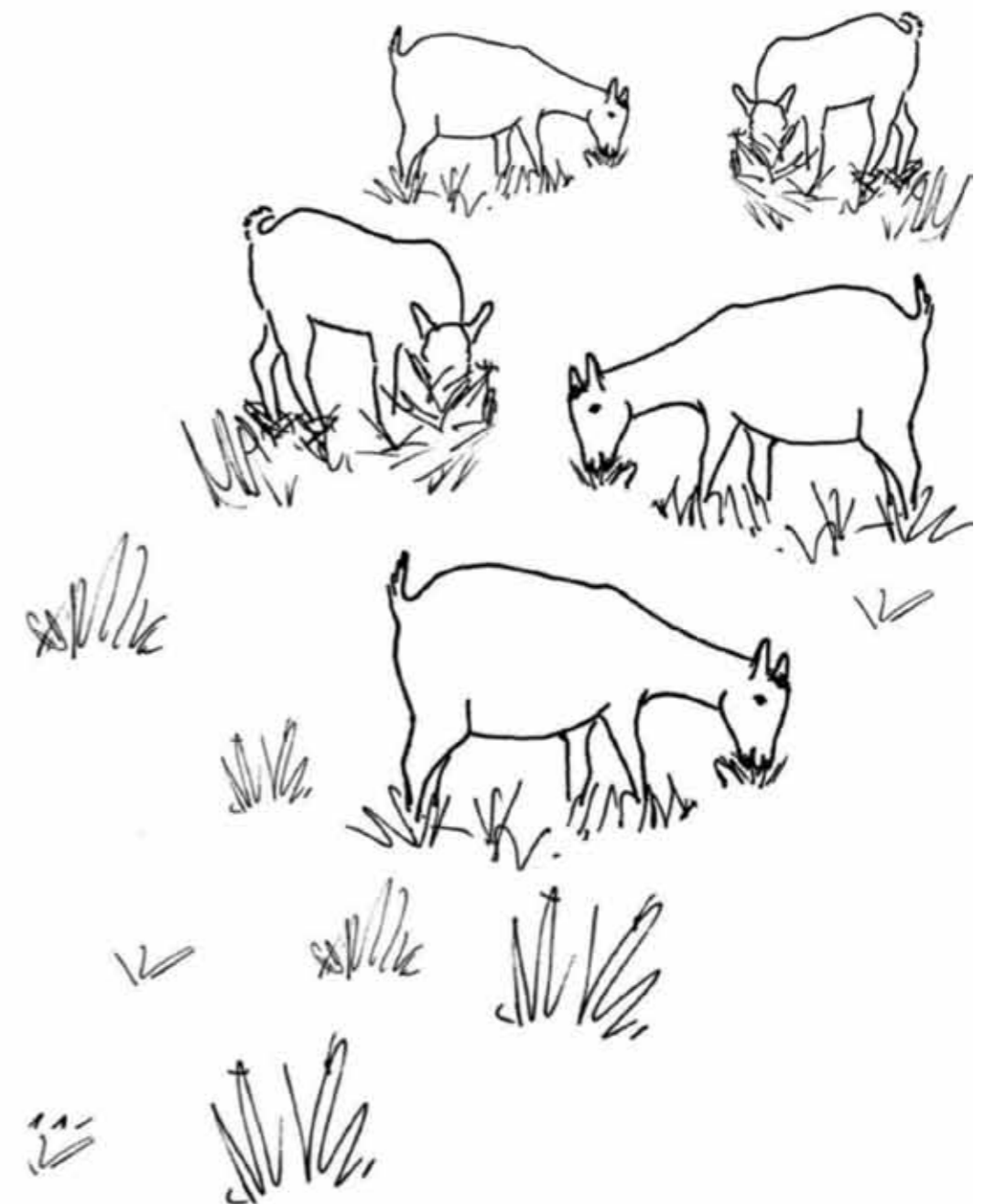
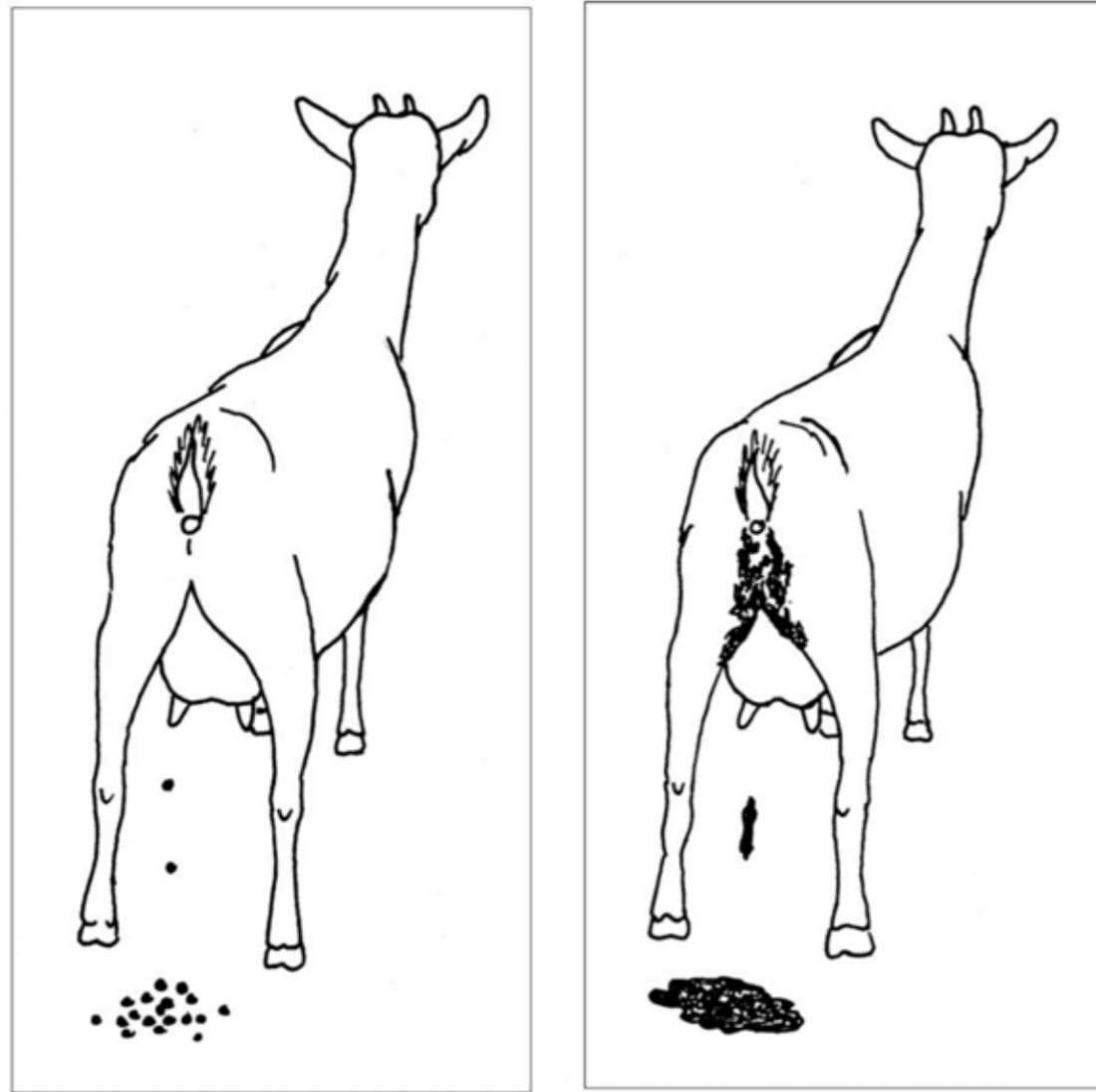
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SHEET 1 - HOW TO RECOGNIZE DISEASE



SHEET 1 – HOW TO RECOGNIZE DISEASE

What do we see in the pictures?

Top left: a goat with normal droppings next to another with diarrhea. In the rest of the page: a flock grazing and below, left, a goat lying down and isolated from the others.

How can we see if an animal is healthy or sick?

HEALTHY ANIMAL:	A SICK ANIMAL CHANGES ITS BEHAVIOR OR ASPECT. IT HAS ONE OR MORE OF THE FOLLOWING SYMPTOMS:
<ul style="list-style-type: none"> • It walks well • It is active, alert and has a lively look • It eats and drinks well and ruminates after meals • It has a smooth and shiny pelt • It breaths normally • It has clear urine and droppings with normal consistency 	<ul style="list-style-type: none"> • It walks alone and is depressed • It is aggressive or anxious • It is weak, with fallen head and tail • It has diarrhea • It lies down • It has liquids running down from the nose or eyes or from other openings • It doesn't walk well (it limps) • It doesn't eat normally (stops grazing or drinking water) • It is very slim • It has a big belly (swollen) • It breaths with difficulties • It has wounds on the body • It has a high body temperature.

What should we do if we notice that an animal is not well?

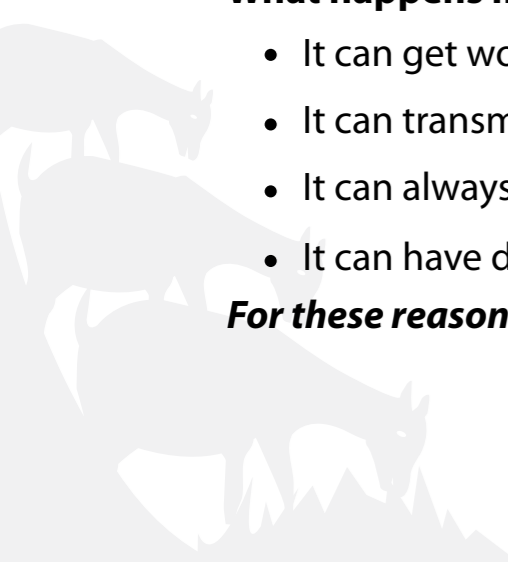
We should separate it from the healthy animals and immediately call the paravet to assist.

We shouldn't forget feeding and watering the animal while it is separated from the others!

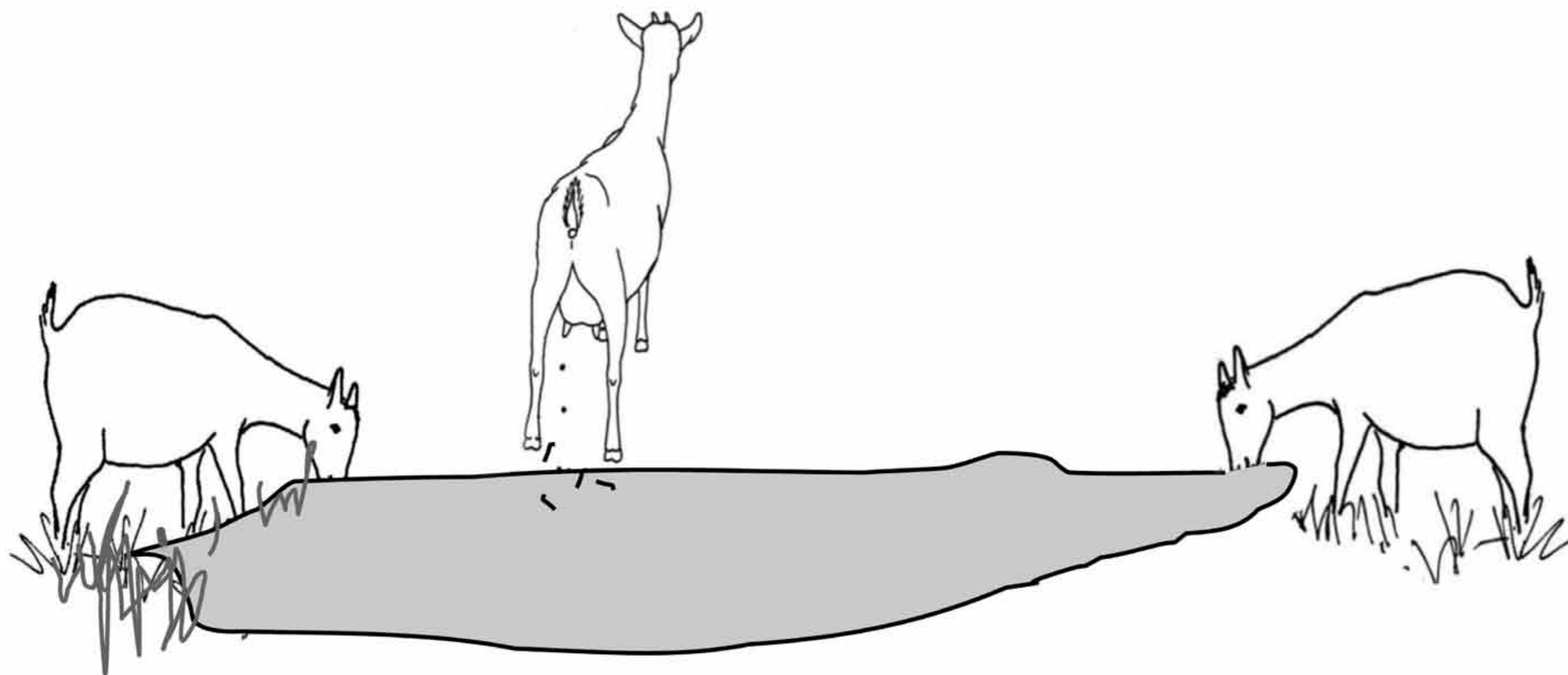
What happens if we don't treat a sick animal?

- It can get worse and die;
- It can transmit the disease to other animals and cause major losses;
- It can always have health problems and never become a good breeder or a good animal for sale;
- It can have diseases transmissible to human;

For these reasons it is very important to treat sick animals!



SHEET 2 – CAUSES OF DISEASES



SHEET 2 – CAUSES OF DISEASES

What do we see in the pictures? A goat defecating in the water; other goats are drinking the same water with droppings.

Why do diseases occur?

Similarly as in people, there are several factors that can cause goats to get sick

- Limited feeding
- Contact of healthy animals with sick animals
- Water or pasture contaminated with droppings
- Parasites present in the pasture or in the shelters

Why is prevention better than cure?

It is better to do all we can to prevent animals from getting sick. By doing so, we can avoid concerns and losses when the animals get sick and need to be treated.

How can we prevent diseases in the flock?

- Feed the animals well as this makes them more resistant to diseases (we will talk more about this in a future session).
- Always give them clean water to drink.
- Keep the goat shelter clean and well ventilated.
- Separate sick from healthy animals, so that the disease is not transmitted.
- Regular (twice a year) treatment against internal and external parasites (we will talk more about this in a future session).
- Where applicable, give goats vaccinations provided by the Veterinary Services.

And when the animal is sick, how can we treat it?

Some diseases can be treated with dewormers, others need drugs such as antibiotics. The best is to call a paravet to assess the situation and treat accordingly.

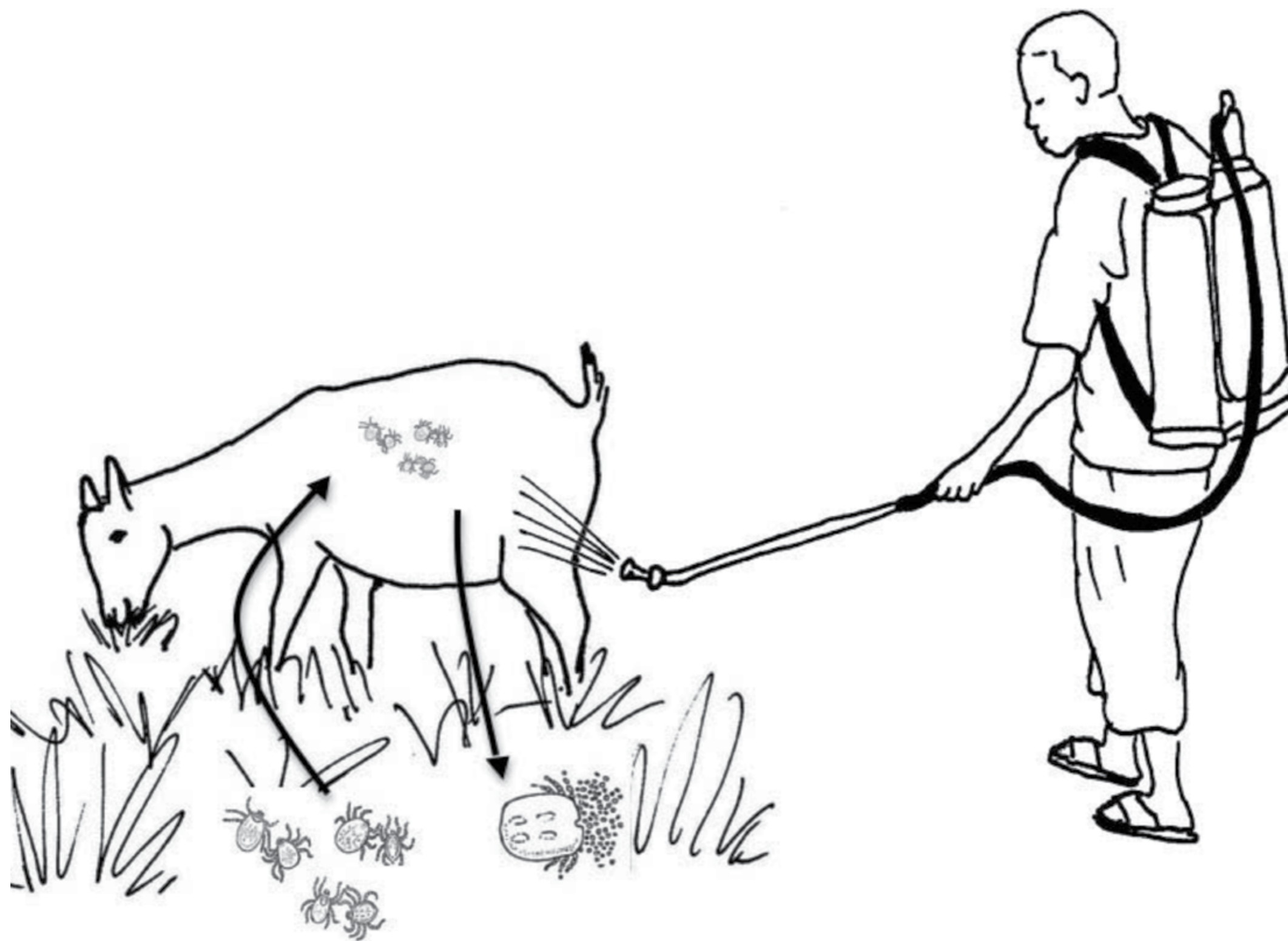
Attention: after drug administration, animals shouldn't be slaughtered and consumed immediately (ask the paravet how many days you should wait)!

Key messages

Causes of diseases
How to avoid animals
from getting diseased
and how to treat
diseases if they occur



SHEET 3 – PARASITES



SHEET 3 – PARASITES

What do we see on the pictures? A goat with ticks is grazing. Ticks on the grass going towards the goat; a big tick falling on the pasture and laying eggs. A paravet is spraying the goat against external parasites (ticks).

What are parasites?

Parasites are very small animals that live by benefitting from other animals, in this case, goats.

Examples of parasites are ticks, worms, flies, acarus (often very small or tiny animals that can't be seen with the naked eye that live on the skin or inside the animal).

HOW DOES AN ANIMAL WITH PARASITES LOOK?	WHAT ARE INTERNAL AND EXTERNAL PARASITES?
<ul style="list-style-type: none"> • Skinny • Sad • It gets sick easily • It has difficulties to reproduce • It can have wounds on the skin. 	<ul style="list-style-type: none"> • Internal parasites live inside the animal's body (such as worms). • External parasites are those that live on the animal's skin (such as ticks) and can cause wounds and abscesses. • Ticks can cause diseases that result in diarrhea.

How do goats get parasites?

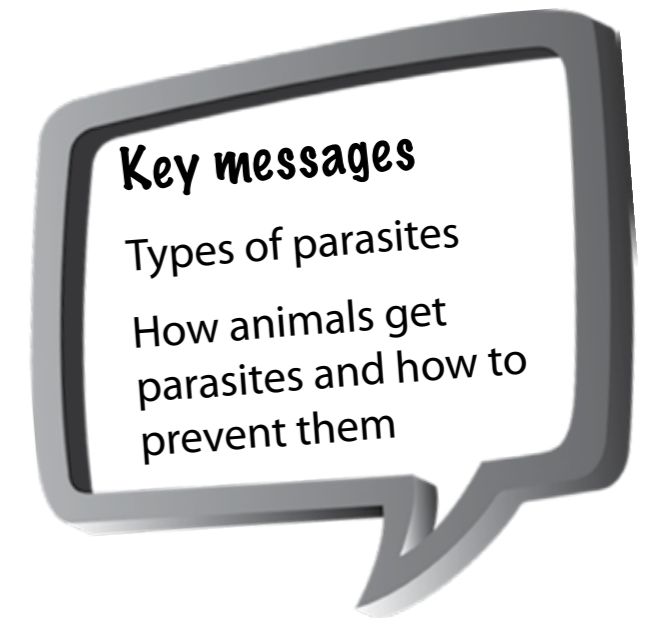
- In the pasture area, especially when there is overgrazing,
- In the shelters if they are not clean, and
- When they are near other goats with parasites.

Ticks are found on the grass in the pasture area. When goats are grazing ticks stick to the goat's hair and move over the body. They then start sucking blood and when they are full, they fall on the ground to lay eggs.

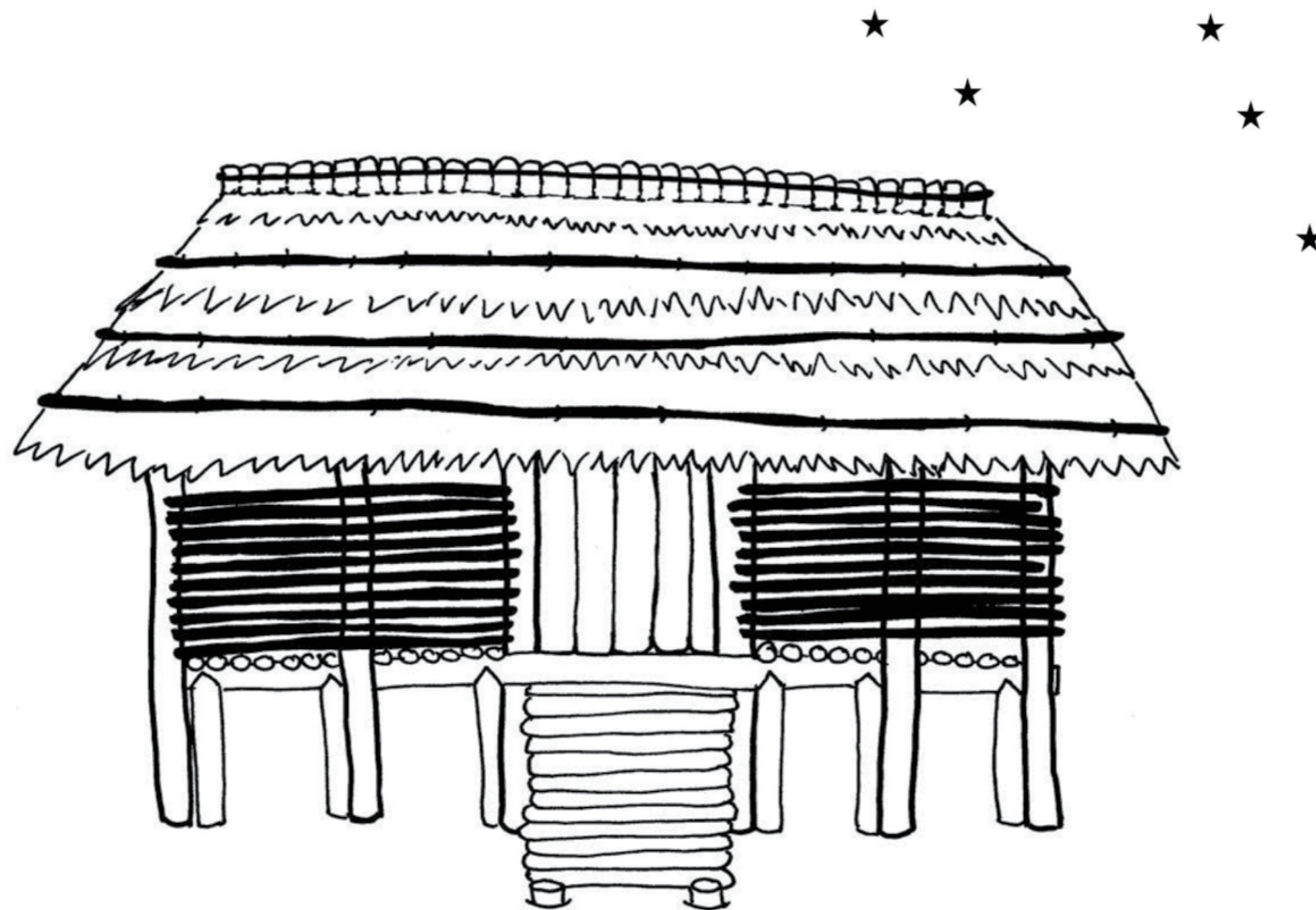
Eggs from worms can also be found on the grass and can be swallowed when the goat is feeding. They then develop inside the goat's intestines and subsequently lay eggs that are expelled together with goats' droppings. Thus, more grass is contaminated.

How can we prevent and treat parasites? Once again, remember: prevention is better than cure!

PREVENTION:	TREAT:
<ul style="list-style-type: none"> • Deworm goats twice each year (once at the end of the dry season/ beginning of the rainy season and again at the end of the rainy season/beginning of dry season); • Deworm young goats after weaning; • Don't deworm pregnant goats during the first month of gestation to avoid harming foetus; • Rotate the grazing areas; • Build goat shelter in an elevated and dry location and keep it clean! 	<ul style="list-style-type: none"> • With dewormer, • If the animal is seriously ill, apart from a dewormer, it can be given an antibiotic to treat possible secondary infections.



SHEET 4 - THE GOAT SHELTER



SHEET 4 – THE GOAT SHELTER

What do we see in the picture? We can see a shelter built above the ground level. It is night, a time at which it is better for the goats to be inside the shelter.

Why is it important to have a shelter?

- A shelter protects the animals from the rain and adverse weather conditions (just like houses protect humans)
- A shelter provides shade (goats like the shade and suffer when there is too much sun)
- With a shelter it is easier to restrain the animals when we need to treat and/or to observe them.
- The shelter can also help to protect the animals against thieves and predators.

What is a good shelter?

- Whenever possible, the shelter should be built on an elevated and dry location.
- The floor should be above ground level (0,6 to 1 m) and should be of bamboo or thin poles/stakes placed at approximately 1 finger distance from each other to allow droppings to fall on the ground. This prevents animals from being in contact with urine and droppings (hence possibly parasites).
- The shelter should be covered to avoid rainwater from entering.
- The shelter should be open enough to allow sunlight to enter in the mornings and late afternoons to ensure it stays dry and well ventilated.
- There should be supplemental feeding in the shelter (in the dry season) and clean water near the shelter (always).
- The shelter should be at least 1.5m² (one and half square meter) for each doe with kid and 1m² (one square meter) for other animals.

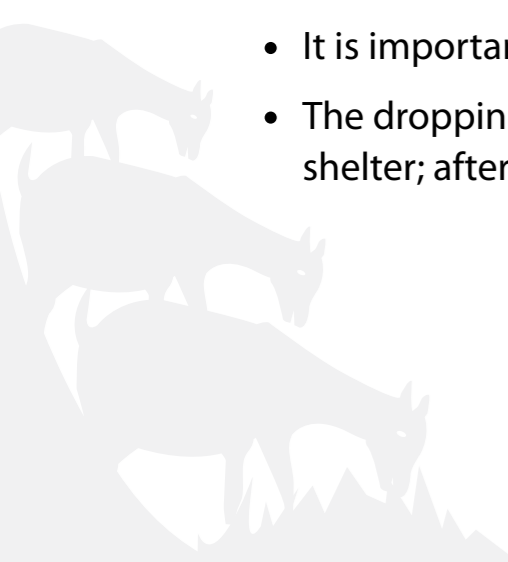
What precautions should we take with a shelter?

- A dirty shelter can be a source of diseases!
- It is important to clean the shelter at least once a week.
- The droppings that are underneath the shelter should be collected at least once a week and kept separate from the shelter; after some weeks, it can be used as manure for the cropping areas.

Key messages

Importance of the shelter

How and where to build a goat shelter and what precautions to take



SHEET 5 – FEEDING



SHEET 5 – FEEDING

What do we see in the pictures? A flock of goats grazing with cattle. On the pasture we see grass as well as shrubs and trees.

Just like people need a balanced diet, animals also need good feeding to grow healthy.

What should goats eat to grow well and be healthy?

- It is very important to have a diverse diet consisting of grass, shrubs and tree leaves.
- Goat keepers can cut and give their goats:
 - Crop residues (maize, sorghum, cassava, peanuts, etc.),
 - Vegetable leaves (cassava, sweet potato, pumpkin, etc.),
 - Vegetable left overs (sweet potato, pumpkin, cassava, etc.)
 - Native and planted vegetation (leucaena, mulberry, velvet bean, etc.)
- It is important for goats to eat leaves from trees and shrubs that give pods because they are usually rich in minerals and vitamins that are important for the good development of the animals.
- It is important to water goats daily. The water must be clean and free of droppings.

Difference in feeding between the dry and rainy season

- In the rainy season animals are fatter because they have more feed available.
- In the dry season animals are thin because of reduced pasture.

What can be done to mitigate the feed scarcity during the dry season?

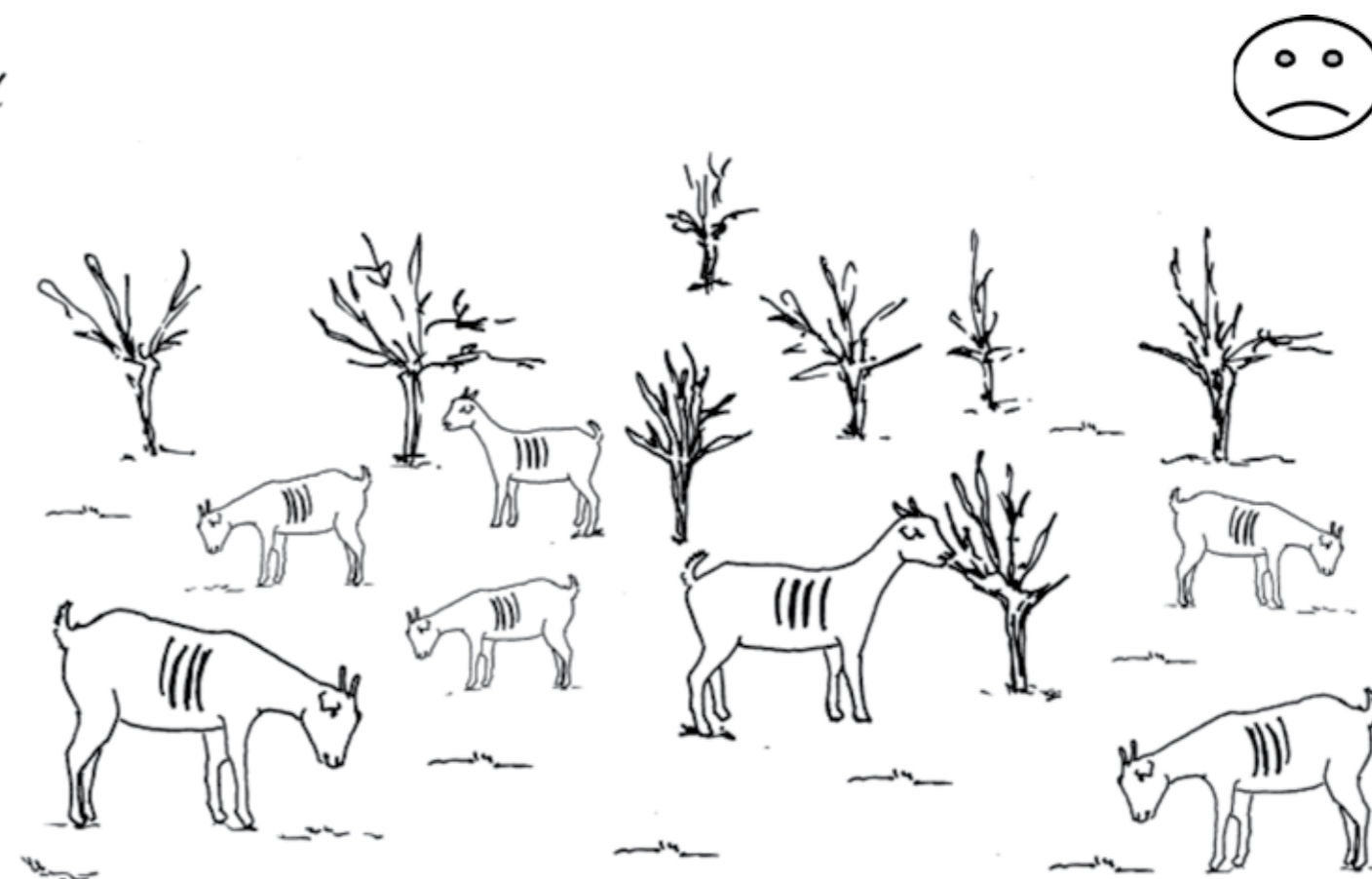
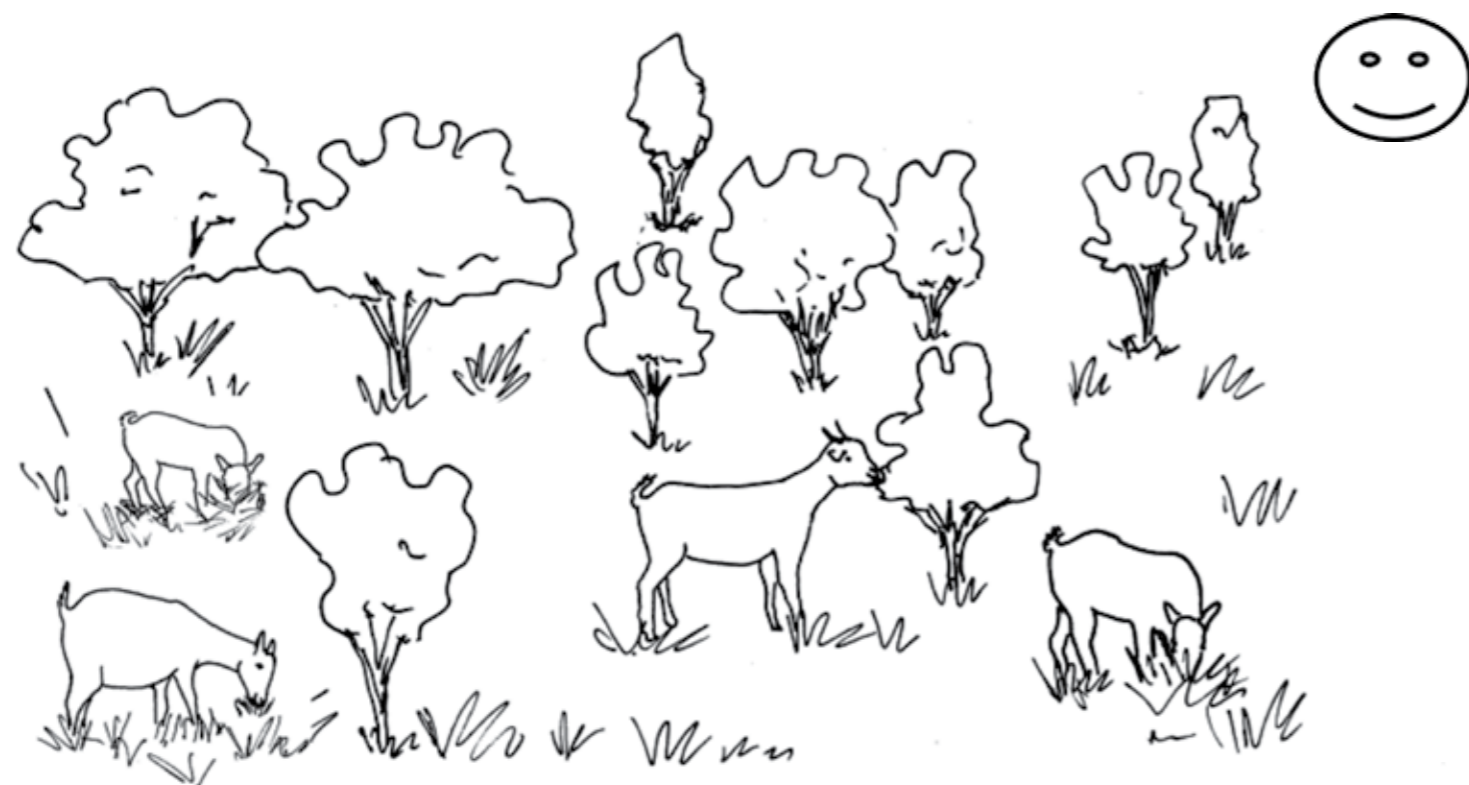
One option is to preserve grass as hay bales in the rainy season to use as feed during the dry season. In addition, crop residues as well as leaves of forage trees can be given to the animals in the dry season.

Key message

Importance of good goat feeding throughout the year



SHEET 6 – PASTURE MANAGEMENT (1)



SHEET 6 – PASTURE MANAGEMENT (1)

What do we see in the pictures? On top, a good practice: a herd of goats grazing in a field of grass, trees and shrubs.

Below, a bad practice: many skinny goats grazing in a depleted field.

What is overgrazing and why is it important to avoid it?

- A pasture area has its 'life cycle'.
 - During the rainy season there is abundant pasture and in the dry season the pasture is scarce.
 - In order for the pasture to continue growing, it is necessary to have seeds in the earth.
- **Overgrazing** is what happens when animals stay for too long on the same pasture and
 - Eat all that exists;
 - The pasture gets depleted and is not productive the following year;
 - When the pasture is depleted, the animals start suffering, getting skinny and sicker.

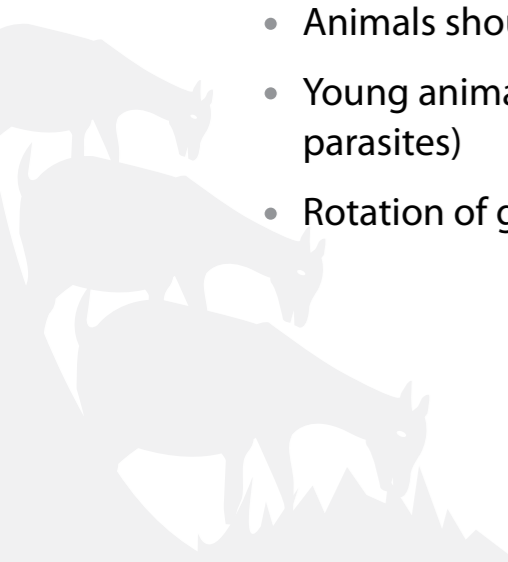
For these reasons it is important to move animals to different grazing sites regularly (rotation of grazing areas).

How should the pasture area be?

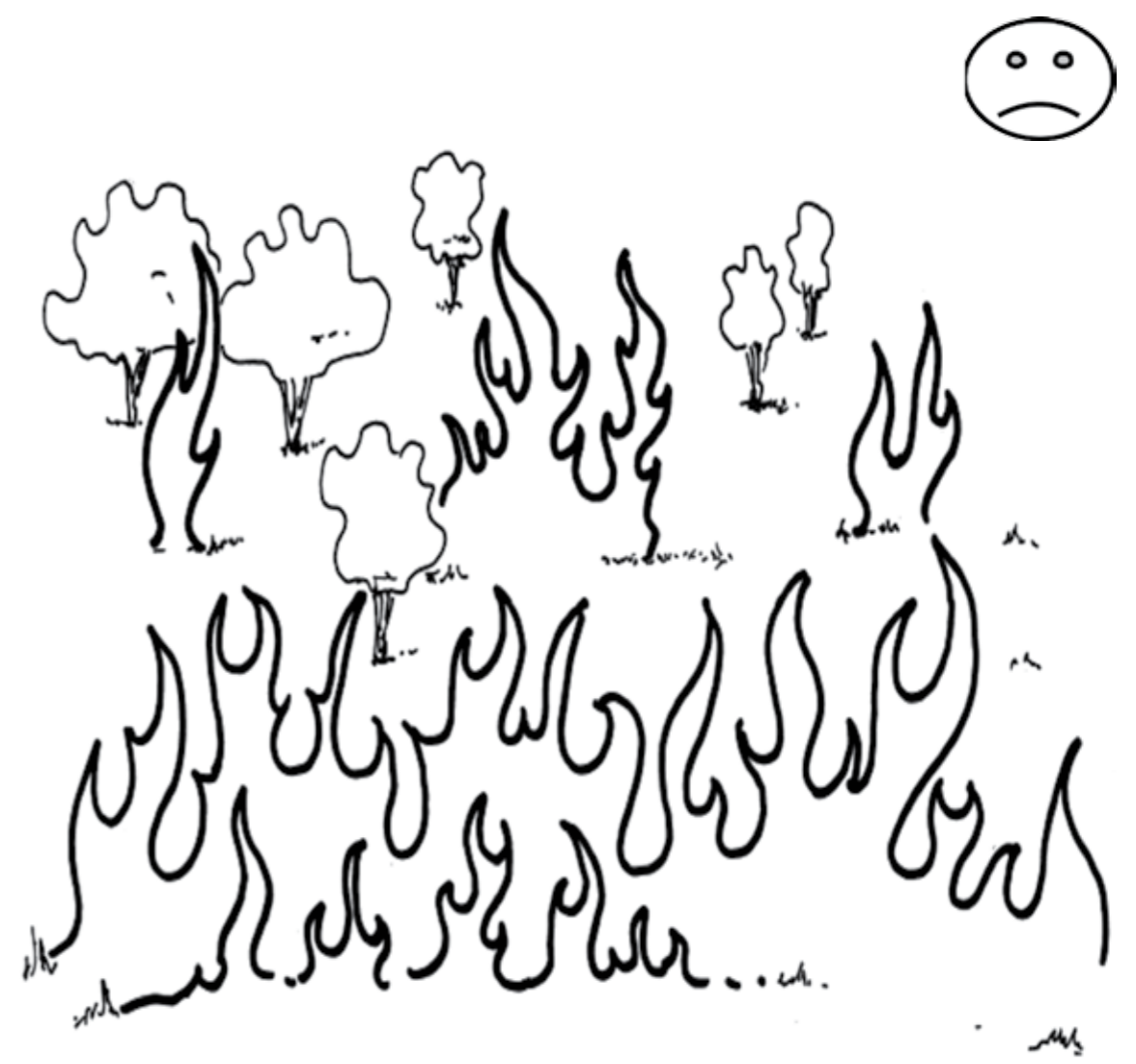
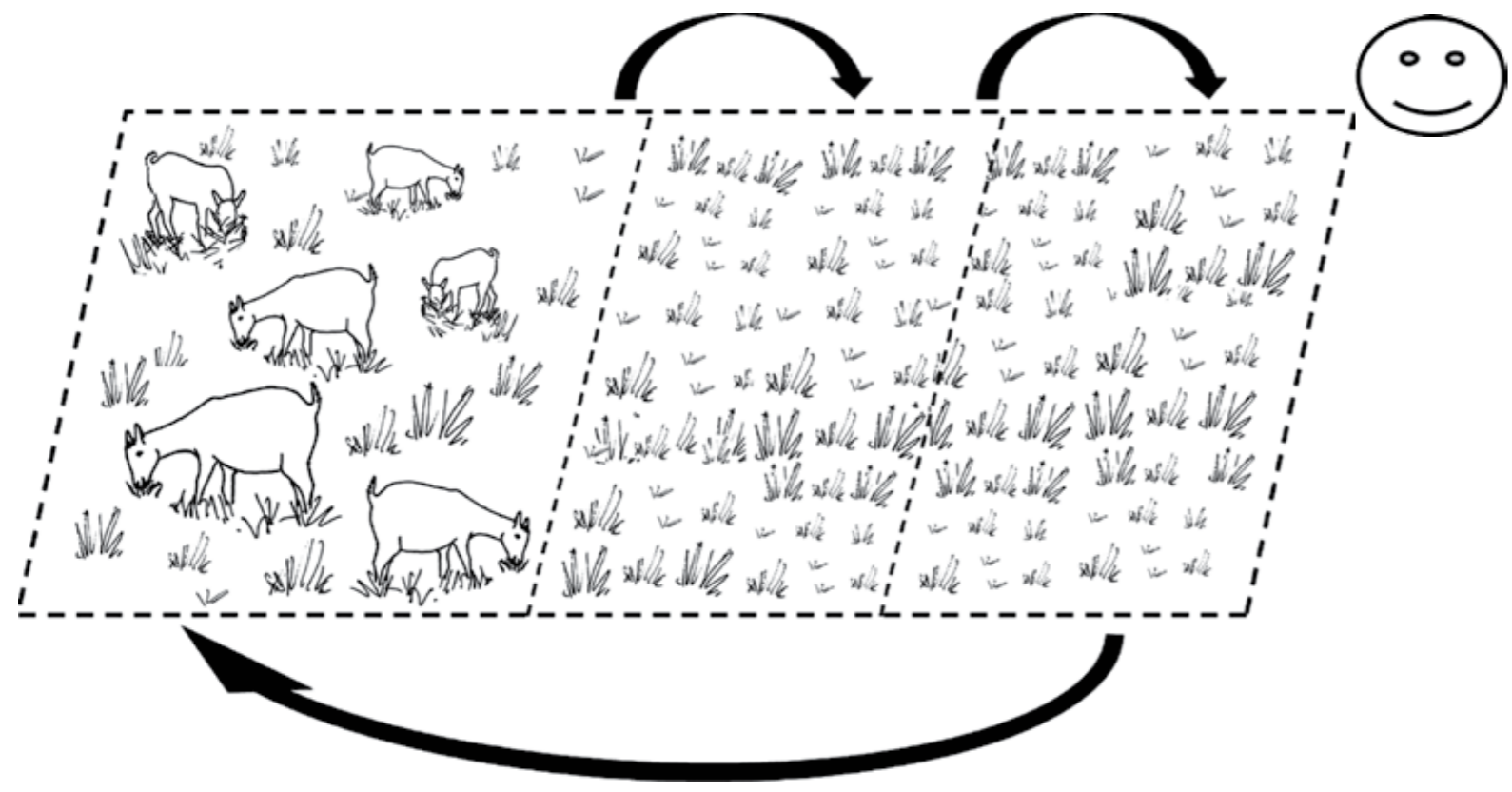
- Animals should graze freely (not tethered).
- Goats and cattle can graze on the same area. This is advantageous because they will eat different plants.
- The pasture area should have varied vegetation.
- Animals should be moved before depleting the pasture area.
- Young animals, being less resistant to diseases, should graze in cleaner sites (less parasites)
- Rotation of grazing areas is advised.

Key message

Good practices on the use and management of community pasture areas to avoid overgrazing



SHEET 7 – PASTURE MANAGEMENT (2)



SHEET 7 – PASTURE MANAGEMENT (2)

What do we see in the pictures? On top; good practice: rotation of pasture
Below, bad practice: fire in pasture area

What is overgrazing and why is it important to avoid it?

- A pasture area has its 'life cycle'.
 - During the rainy season there is abundant pasture and in the dry season the pasture is scarce.
 - In order for the pasture to continue growing, it is necessary to have seeds in the earth.
- **Overgrazing** is what happens when animals stay for too long on the same pasture and
 - Eat all that exists;
 - The pasture gets depleted and is not productive the following year;
 - When the pasture is depleted, the animals start suffering, getting skinny and sicker.

For these reasons it is important that to move animals to different grazing sites regularly (rotation of grazing areas).

What is pasture rotation?

- It is a systematic way of moving the animals around over various pasture areas.
- The rotation prevents overgrazing and even depletion of the area and it helps to control parasites.

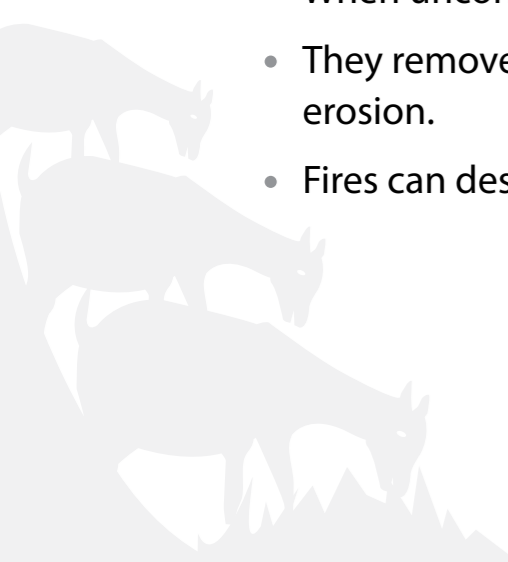
Why is it dangerous to burn grazing areas?

The fires:

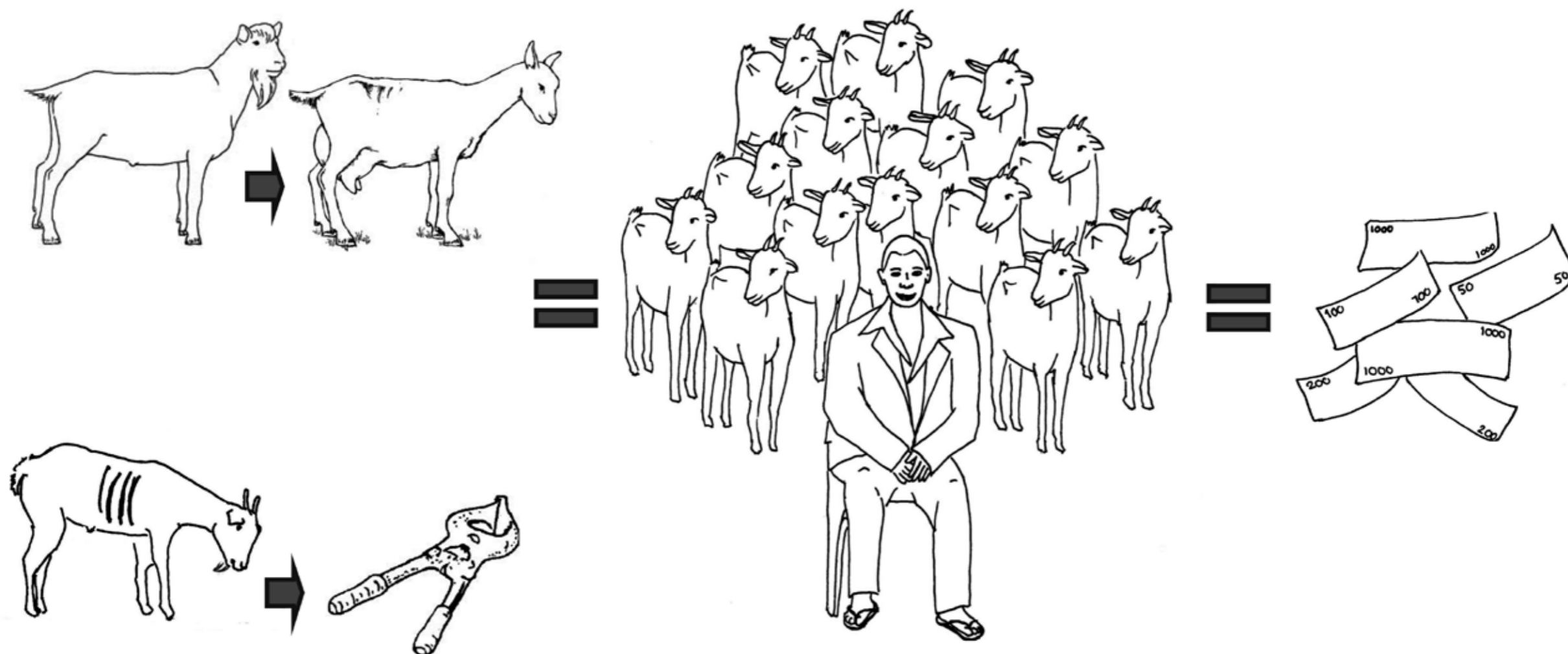
- Will destroy many shrubs that goats can eat.
- When uncontrolled, fires can destroy pasture and endanger houses, people and animals.
- They remove grass and shrubs from the soil leaving it more exposed to the sun and rains possibly causing erosion.
- Fires can destroy important medicinal plants for the community.

Key message

Good practices on the use and management of community pasture areas to avoid overgrazing



SHEET 8 – REPRODUCTIVE MANAGEMENT (1)



SHEET 8 – REPRODUCTIVE MANAGEMENT (1)

What do we see in the pictures? Good breeding males selected for reproduction, and the poor ones are castrated. By using good breeding males, a healthy flock is maintained and there is more income for the farmer.

Talk with goat keepers on the possible advantages of having a good reproductive management system.

- Good reproductive management allows maintaining the same flock size while generating income by selling offspring.
- More good quality and quantity of offspring will generate higher income through sales.
- For this it is important to select the animals we want to keep in the flock and plan parturitions.
- By planning parturitions, good quality offspring will be born in the right period of the year.
- With a good reproductive management system we will have healthy flock growth to address our needs!

What are the advantages of castration?

In order to have good offspring, we must only choose the best breeding bucks and castrate the others (with a burdizzo).

The advantages of castration are:

- Castrated bucks will put on weight faster than non-castrated bucks;
- Since they gain weight faster, castrated bucks are easier to sell.
- Meat from castrated animals is of better quality (it doesn't smell and is tenderer).
- The number of abortions caused by attempts of mating pregnant does is reduced and, therefore, the number of births increases.
- The castrated bucks are quieter (less fighting).
- It avoids propagation of undesirable characteristics in the flock (poor quality bucks should be castrated).

When should animals be castrated?

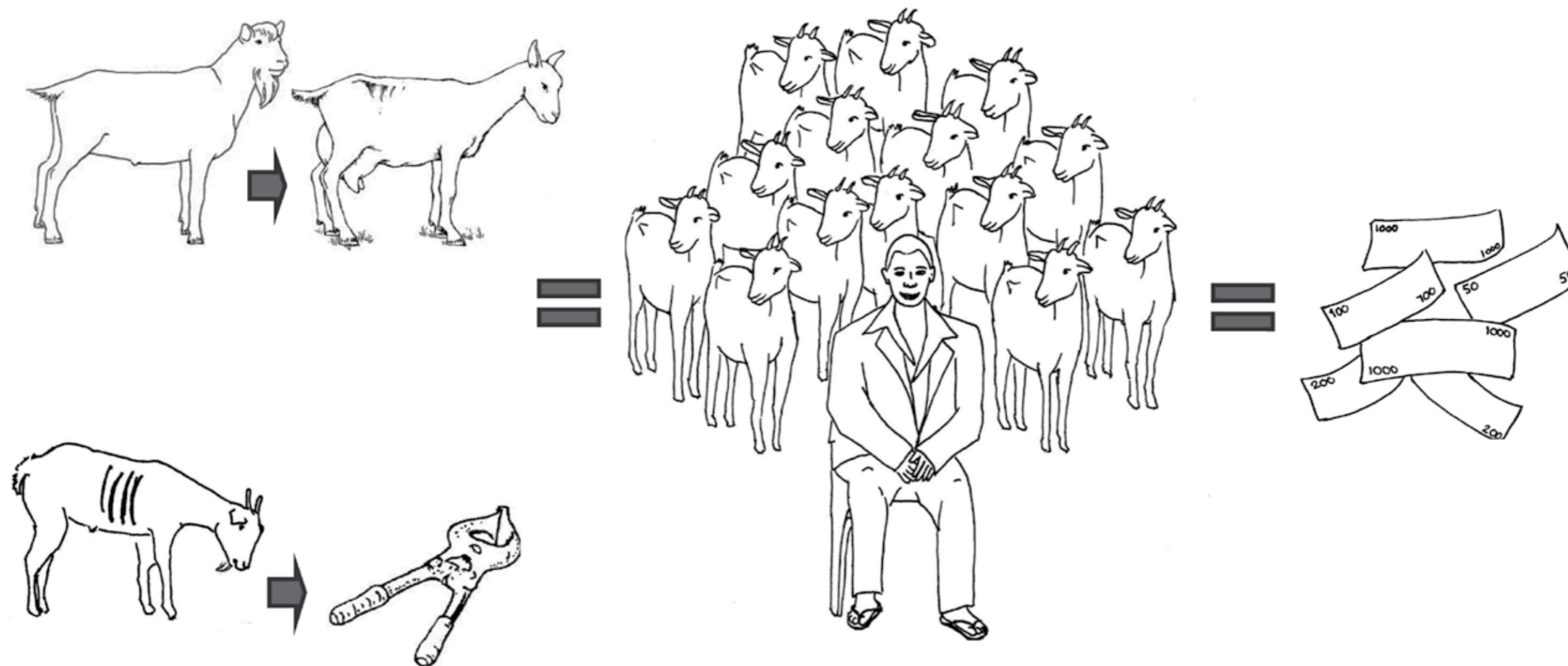
- As soon as possible, when the animal is young (before 3 months of age).
- Old bucks that are not needed for reproduction could be castrated and sold afterwards.

Key message

Advantages of a good reproductive management; ideal age for and advantages of castration.



SHEET 9 – REPRODUCTIVE MANAGEMENT (2)



SHEET 9 – REPRODUCTIVE MANAGEMENT (2)

What do we see in the pictures? Good breeding males are selected for reproduction, and the poor ones are castrated. By using good breeding males, a healthy flock is maintained and there is more income for the farmer.

How many bucks and does should I have in my flock?

A flock has does, bucks for reproduction, castrated bucks and kids.

It is important to look at the composition of the flock to have more births of healthy offspring and, thus, more income from sales of animals.

- One buck is enough to mate 20-30 does.
- With one buck I can have up to 30 does. If I have more than 30 does I will need more bucks.
- It is not worthwhile to have more breeder males than the necessary because:
 - they will start fighting for the does and get hurt
 - they can cause abortion in pregnant does
 - a lot of bucks in a flock does not result in more pregnant does.

What are the animals I should choose to keep in my flock?

Choose the does and buck with the best characteristics:

- The most sturdy and healthy,
- Well built,
- Without undesirable characteristics,
- Bucks should have both testicles well descended,
- Bucks should not be from the same family with the does they are going to mate.

If we leave bad-quality animals in the flock:

- Undesirable characteristics will be transferred to offspring,
- The quality of the flock decreases over time.

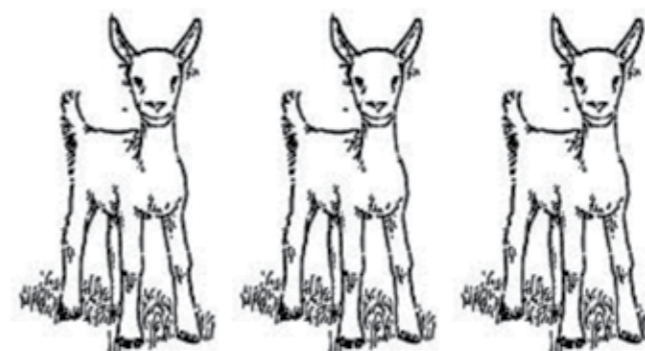
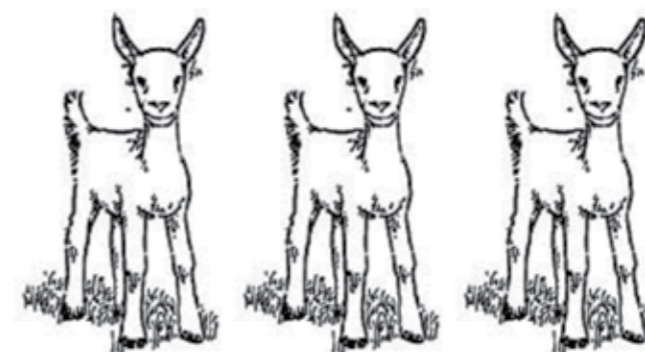
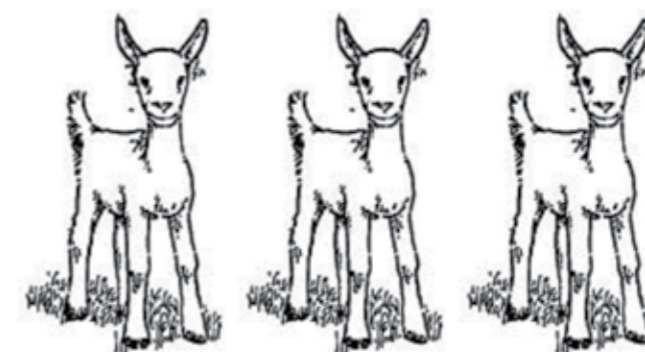
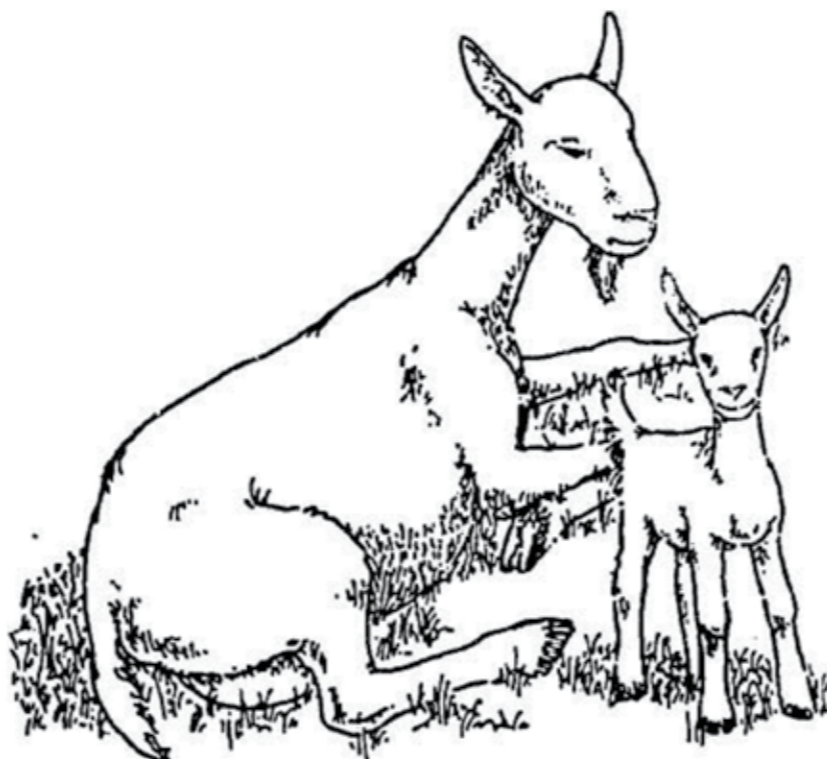
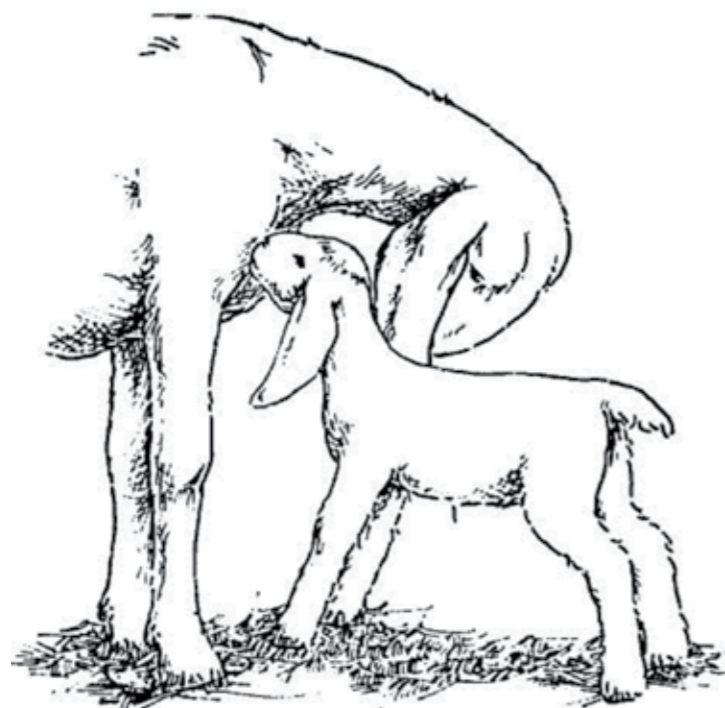
Key messages

Ideal flock composition (right number of bucks and does for a balanced flock) and the advantages of considering flock composition

Characteristics of good reproductive animals



SHEET 10 – REPRODUCTIVE MANAGEMENT (3)



SHEET 10 – REPRODUCTIVE MANAGEMENT (3)

What do we see in the pictures? Two (2) does and their offspring, and to the right many kids.

Talk with goat keepers on the possible advantages of having a good reproductive management system.

- Good reproductive management maintains the same flock size while generating income by selling offspring.
- The more good quality and quantity offspring, the more income we will generate through sales.
- To achieve this, it is important to select the animals we want to keep in the flock and plan parturitions.
- By planning parturitions, good quality offspring will be born in the right period of the year.
- With a good reproductive management system we will have healthy flock growth to address our needs!

What is the advantage of planning parturitions?

- Goats will be born in the time that is more advantageous to us
 - when we want to sell,
 - when there is more pasture,
 - when we have less work in the field

If we don't plan the parturitions:

- offspring can be born at any time
- does may run out of feed and get weak and sick
- offspring can be born when it is not good time to sell

How to plan parturitions?

- We know that the gestation period of goats is 5 months; therefore, the mating time has to be 5 months before the desired time of parturition.

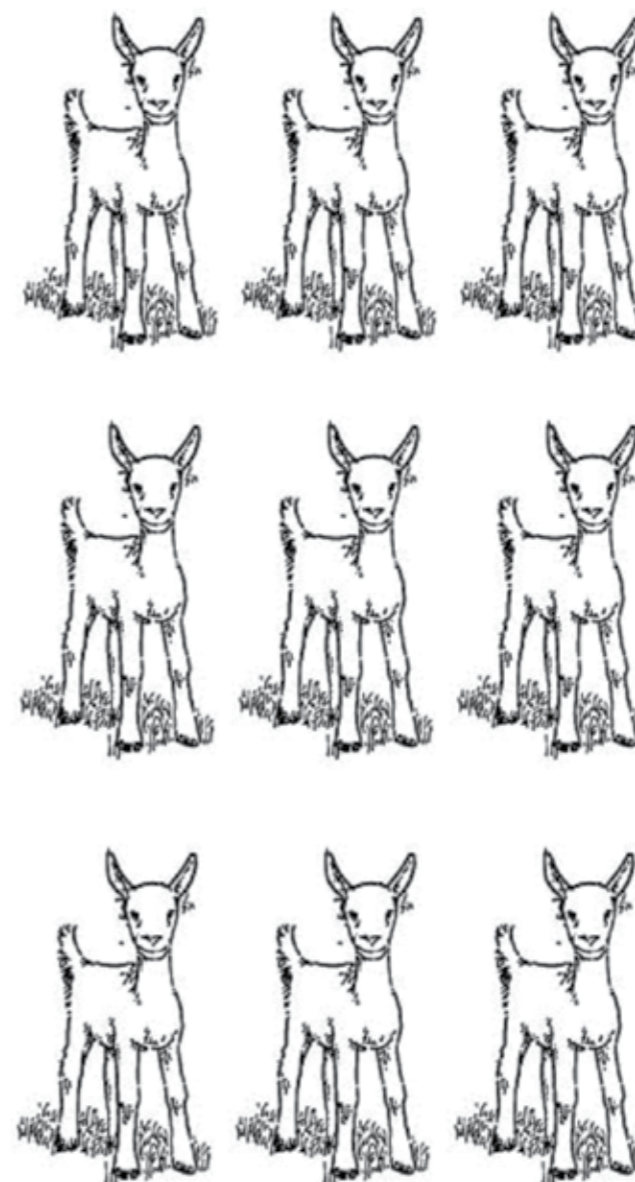
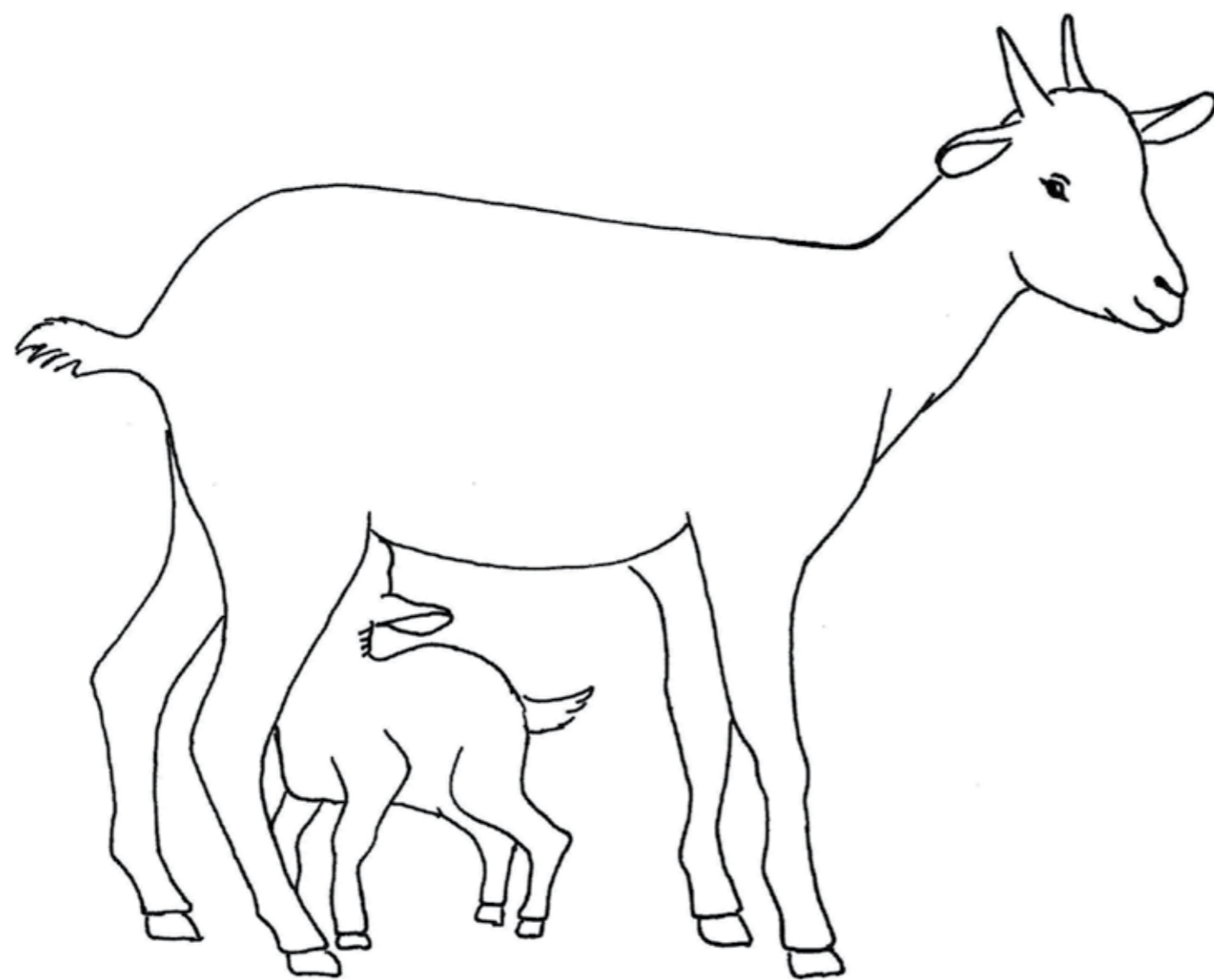
For instance, for offspring to be born in February, the does must be mated in September. This way, the offspring can be sold by Christmas at 10 months of age.

Key message

Planning of parturitions and possible advantages



SHEET 11 – REPRODUCTIVE MANAGEMENT (4)



SHEET 11 – REPRODUCTIVE MANAGEMENT (4)

What do we see in the picture? A kid suckling, and to the right, many kids.

Are there special precautions to consider with pregnant does?

- Does approaching parturition get agitated and keep away from the flock. Hence, it is important for them to be in a safe place where they can be assisted if necessary.
- It is safer for kids to be born in the shelter rather than in the pasture area where they might be attacked by wild animals.
- By separating the pregnant does from the flock we prevent abortions due to harassment by other goats.
- Pregnant does shouldn't walk for long distances, especially during the last months of the gestation.
- Pregnant does should be fed well and they should always have clean water available
- **We need to ensure that the kids, shortly after birth, drink the first milk (called colostrum) as it has important ingredients to make it strong and able to resist diseases. By doing so, more offspring will survive and there will be more goats in the flock.**

What is the best time for does to mate for the first time?

- It depends on their weight not on their age. A doe that has reached $\frac{3}{4}$ of its adult weight is ready for mating. For instance, if the normal weight of an adult doe is 20kg, it can be mated at 15Kg.
- Only healthy does should be mated!

What are the disadvantages when a doe gets pregnant at a young age?

- It will have to share their energy for their own development with that of the kid
- It will never fully develop
- The kids born are often small and weak and can easily die

How can we increase the flock's reproductive performance?

As goat keepers, our objective is to improve and increase production so that we can sell more animals.

To increase the number of parturitions per doe in the flock we need to:

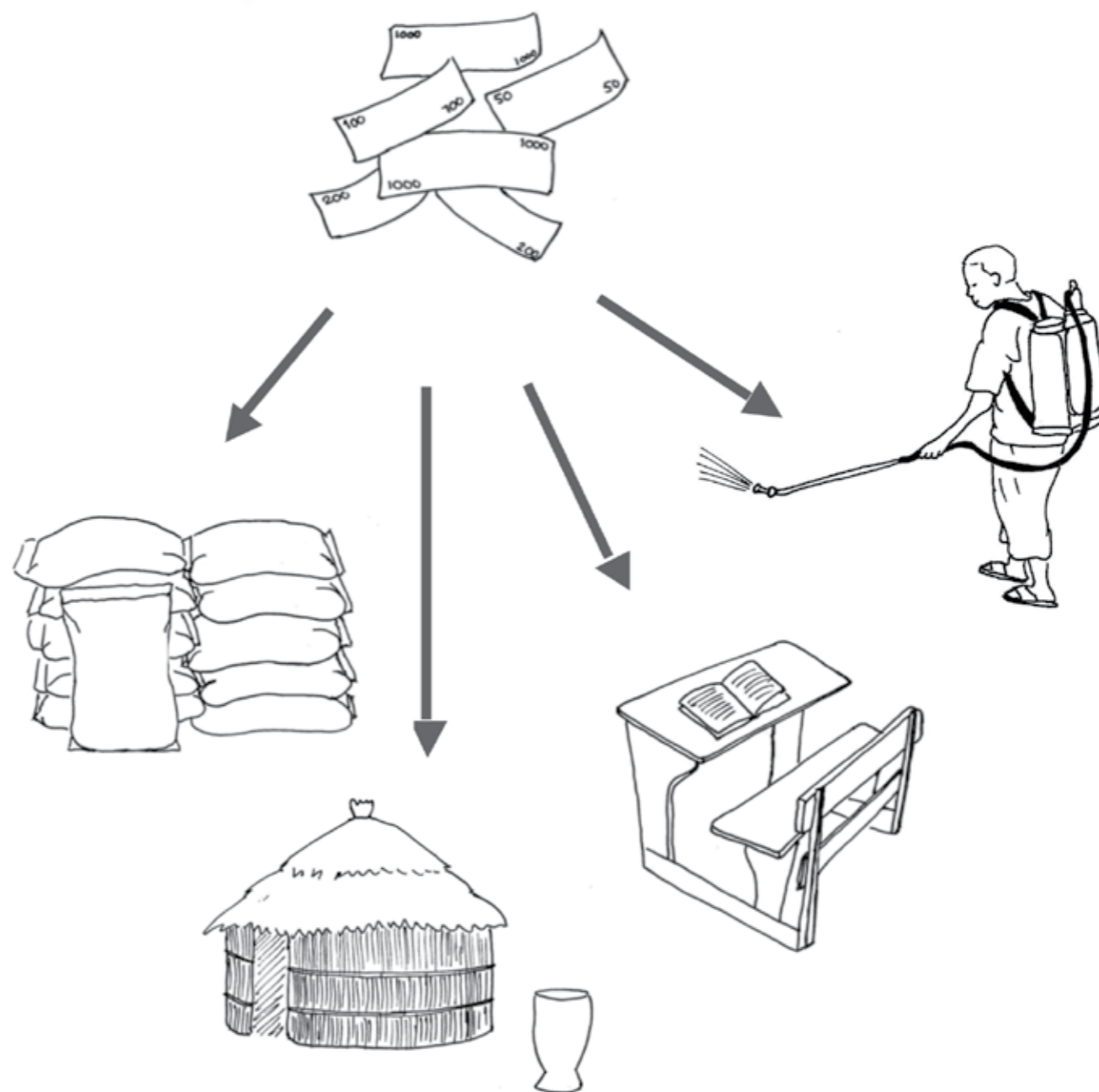
- Carefully choose the breeding bucks and does
- Replace the breeding bucks every 2 to 4 years with younger and stronger animals from other villages so that they won't be from the same family as the does
- Castrate the males that are not good for reproduction
- Sell or slaughter does with undesirable characteristics
- Keep the animals well fed and de-wormed.

Key messages

Precautions to take with pregnant does
Importance of age in reproduction
The mechanisms to increase the reproductive rate of the flock



SHEET 12 – COMMERCIALIZATION (1)



SHEET 12 – COMMERCIALIZATION (1)

What do we see in the pictures? To the left, a goat being sold; to the right there is money that can be used to buy food, for household and school expenditures and to pay the paravet to treat the goats.

Why do persons keep goats?

The goats can be:

- A way of saving money,
- For consumption,
- For selling,
- For offering,
- To give prestige in the community, etc.

Why is it important to have a good flock management?

To ensure that we are not losing money with animal production and that we will continue improving our production.

Are we always earning money when we sell an animal?

Note that not all money from selling animals is profit!

We have to think of the **costs** we had while rearing the animal (e.g., deworming, treatments, transportation to the market, herder, etc.)

Out of the money that we receive from selling an animal (**revenue**) we have to put aside what we spent on that animal. The remaining of the amount we can consider gain or **profit**.

For example: If we sell a does for 900 meticaïs (30 USD) while we spent 60 meticaïs (2 USD) on it (40 on treatment and 20 to go to the market to sell it), then our profit is of 840 meticaïs (28USD).

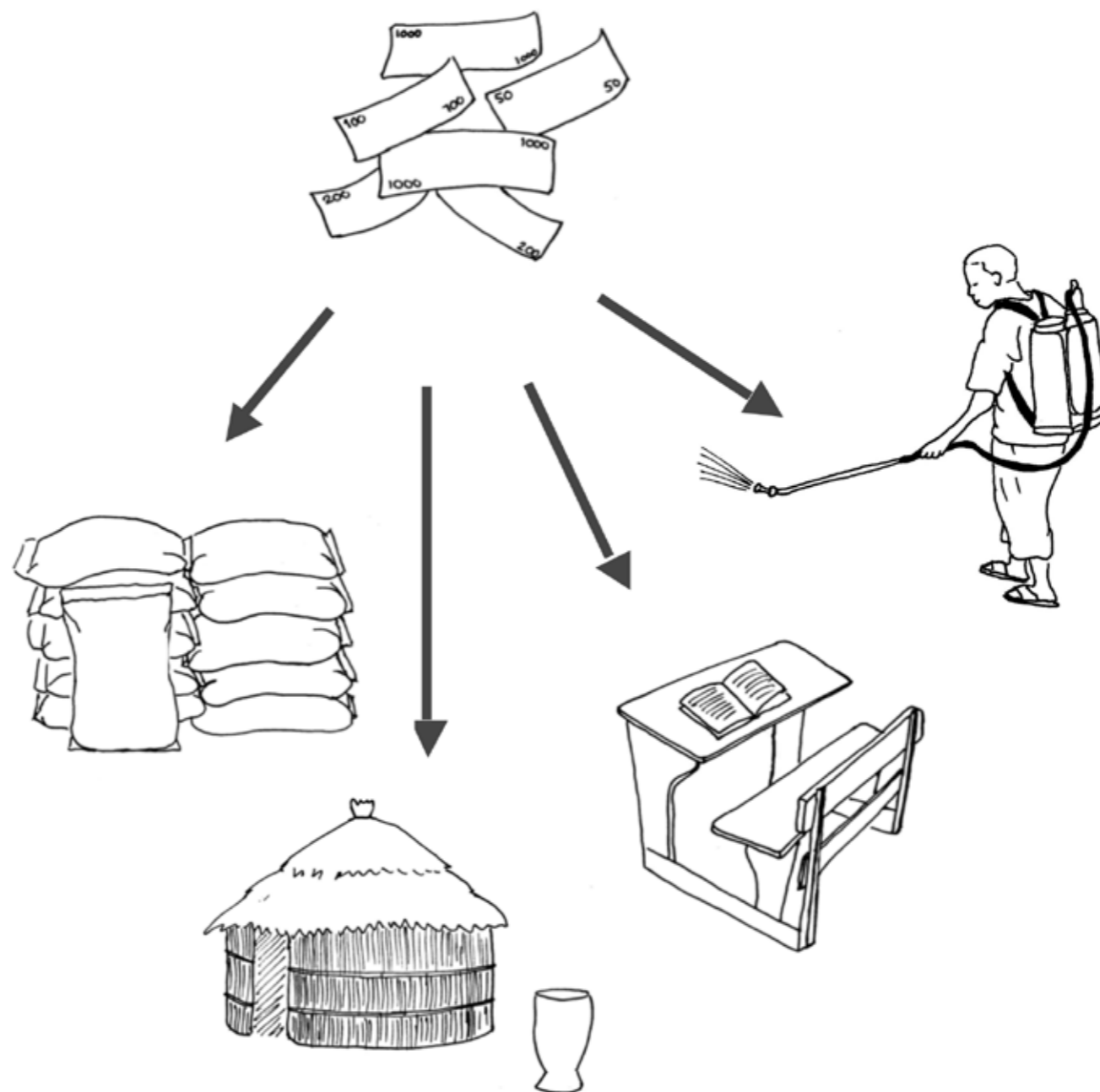
Revenue - Costs = Profit (900 - 60 = 840).

Key messages

The importance of a good flock management
Basics on business, cost and revenue



SHEET 13 – COMMERCIALIZATION (2)



SHEET 13 – COMMERCIALIZATION (2)

What do we see in the pictures? To the left, a goat being sold; to the right there is money that can be used to buy food, for household and school expenditures and to pay the paravet to treat the goats.

Why is it important to invest in the flock?

When we sell animals, it is very important to invest part of the money in the flock so that the business can continue thriving!

Investment in the flock can be:

- To buy a good quality animals for reproduction
- To deworm the animals
- To save some money for when the animals need treatment
- To buy some construction materials to make a goat shelter

Thus, our flock will improve and we will always have good offspring and a reliable source of income!

What may happen if we don't invest in the flock?

If we don't invest in the flock:

- Weak animals or those with undesirable characteristics may mate and produce weak offspring
- We will have less offspring
- We will have to sell animals
- Some animals may get sick and die
- We may end up with no animals.

For these reasons, it is important to invest in good breeding animals and keep the animals healthy!

What can we do to increase the profit?

- Keep the animals healthy (well fed, dewormed, with water to drink)
- Treat quickly diseases when they occur (to prevent the animals from getting worse and infect others)
- Sell the animals when they are young and healthy, around 8 to 10 months (old animals cost more to keep healthy, such as through treatment and we often sell them at a lower price).

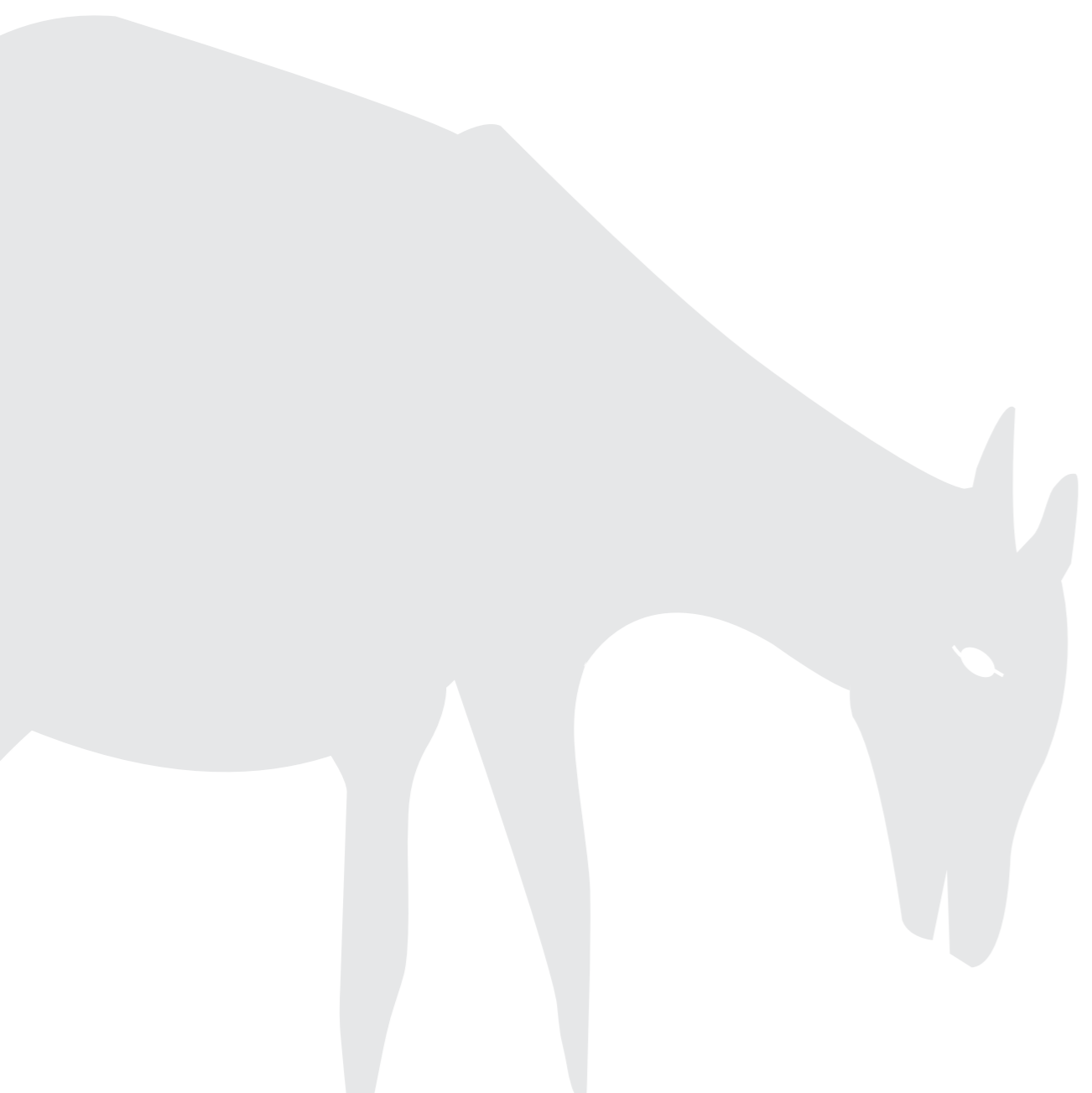
Ensure a balanced flock composition in order to get a lot of offspring.

- A lot of does in a flock can give a lot of offspring each year.
- Don't forget that one breeding buck is enough for 30 does.
- It is not good to have more breeding buck than necessary.
- A lot of bucks in a flock doesn't result in more pregnant does.

Key messages

The importance of investing in the flock
Production practices that help increase the profit





TECHNICAL INFORMATION

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