

# KUJENGA MAISHA EAST AFRICA-KUMEA



2021

## FARMERS' GROUPS TRAINING FOR SCALING UP DARY GOAT FARMING IN WESTERN KENYA



**JULY, 2021**

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# 1.0 Executive summary

The Dairy goats training for farmers was carried out as from 12<sup>th</sup> July, 2021 to 15<sup>th</sup> July, 2021. The training was done simultaneously in Mwisebelo New Apostolic church in Emuhuya subcounty of Vihiga County involving 18no. (3men and 15women) participants and Ebukuga village of Vihiga subcounty in Vihiga County involving 17no. (5men and 12women) Participants. The objective of the training was fivefold as follows;

- i. Orientation of farmers on Dairy goat farming and rearing
- ii. Understand the role of National Dairy Goat Association in supporting and promoting Dairy goat farming in the region
- iii. Appreciate the dairy goat rearing and farming livelihoods
- iv. Improve their capacity in Dairy goat farming and rearing to enhance sustainable dairy goat farming
- v. Develop appropriate action plans for promotion of Dairy farming & rearing

The training enhanced participant skills in goat rearing, breeding and management. Participants appreciated the role played by National Dairy Goat Association in enhancing their capacity in goat rearing and management. They commended KUMEA for organizing the training and agreed to scale up dairy goat rearing and farming.

They resolved to enhance dairy goat livelihoods and support other members who will be interested in Dairy goat farming. Therefore, the training achieved the following thresholds

- a) Providing Dairy goat farmers with adequate capacity and skills to enhance dairy goat rearing in the communities
- b) Promotion of sustainable dairy goat farming and rearing
- c) Enhanced livelihoods opportunities for farmers adapting Dairy farming due minimal land required and feeds
- d) Develop network support and close collaboration with National Dairy Association to enhance Dairy goat farming in Western Kenya
- e) It was agreed that the trained participants will be given 1 no. Kenya Alpine (Doe) Dairy goat and the each of the group represented will be sharing the 3no. Kenya Alpine Buck.

The project team will work closely with National Dairy association in carrying follow-ups to ensure the farmers are adequately supported and encouraged. Participants appreciate the role played by Kujenga Maisha East Africa-KUMEA and respective Donors i.e., Apostle Harold Eckhardt for continuous support to enhance rural livelihoods and scaling up dairy goat farming in Western Kenya. KUMEA takes this opportunity to thank the National Dairy Goat Association for continuous support in undertaking this noble project in Western Kenya communities.

## 2.0 KEY CONCLUSION AND RECOMENDATIONS

1. Conditions permitting, there is need to do a pre-visit to the benefiting dairy goats' farmers to assess the progress of unit constructions. This will ensure that each of the farmer has adequate shelter for the goats.
2. Consider having an interactive meeting between the facilitators and the dairy goat farmers' at least four weeks after delivery of the dairy goats. The need for monitoring of farmers to ensure they are able to undertake what they learned in the training and to ensure the get relevant technical support from the key officers involved.
3. DGAK will endeavour to ensure that the farmers join the Association for the purpose of sustainability. This is important for farmers will ensure the required support is provided and also benefit from study tours for livestock improvement.

## **2.0 WORKSHOP PROCESS&PROCEEDINGS**

### **DAY ONE: TUESDAY, 13<sup>TH</sup> JULY, 2021**

#### **Activity 1: Participants Introduction and participants expectations**

Participants introduced themselves through participatory discussions and come with following key issues as their workshop expectations

- a) Understand the role of national Dairy Association in supporting dairy goat farmers
- b) Awareness on Dairy goat rearing and management
- c) Get know the type of Dairy goats and the difference with the local breeds
- d) Understand and awareness on animal health issues and diseases affecting dairy goats
- e) Share experience for dairy goat farming
- f) Understand the breeding aspects and process for dairy goats
- g) Learn about how to improve breeds and how to address challenges in Dairy goat rearing

#### **Activity 2: General Overview Management of Dairy Goats**

##### **I. INTRODUCTION**

- Advantages and disadvantages of goat keeping,
- Role of goats in Western Kenya
- Opportunities existing for goat production in Western Kenya
- Challenges in the promotion of goat production in Western Kenya

##### **II. DAIRY GOAT HOUSING**

- Factors to consider
- Key qualities of a good goat house
- Why dairy goat housing?
- House plan.

##### **III. FEEDING OF DAIRY GOATS**

- Feeding habits
- Fodder types
- Feeding rules
- Feeding requirement
- Feeding Composition
- Feed intake
- Fodder conservation

##### **IV. DAIRY GOAT BREEDS AND BREEDING**

- Introduction
- Breeds
- Breeding
- Keep characteristics of a dairy goat

## V. DAIRY GOAT MANAGEMENT

- Kidding
- Weaning
- Separation of sexes
- Breeding plan

## DAY TWO: WEDNESDAY, 14<sup>TH</sup> JULY, 2021

### Activity 3: Advantages and Disadvantages of Goat Keeping

#### Disadvantages

- Goats are susceptible to predators
- Small value attached to goats makes formal credit systems uneconomic
- Small value also makes formal insurance systems difficult to administer
- Goats are very much susceptible to bronchio-pneumonia
- They are also much susceptible to parasites.

### Activity 4: Role of Goats in Western Kenya

Owing to diminishing land sizes in the Western Kenya as a result of land fragmentation resulting from high population growth, there is need for farmers in the region to focus on agricultural production practises that guarantee higher return for unit of production. In livestock production, the dairy goat offers the best opportunity for farmers to utilise their land sizes and yet reap higher profit. It is actually more economic to rear a dairy goat than a dairy cow for a poor farmer with less than one acre of land to subsist on.

The value attached to the dairy goat is as follows: -

- They produce a vast range of useful products and services e.g. milk, meat, hair, manure, skin, etc others include control of bush encroachment, cash income, gifts etc.
- In harsh environments goats often produce milk when cattle have dried up.
- Goat milk is highly nutritious and is a source of protein, calcium and phosphorus and as also a vital supply of Vitamin A, which is often deficient in these diets for infants.
- Goat's small size makes them ideal to slaughter for a few people at family celebration or during religious holidays.
- Goats are relatively cheap to buy and build up flock very fast thus spreading the risk inherent in livestock ownership.
- Goats can regularly and easily be sold for cash.
- Goats being small can be easily looked after by young children.

### Activity 5: Opportunities & Challenges Existing for Goat Production in Western Kenya

#### a) Opportunities

The following factors make the introduction and adoption of dairy goats attractive.

- Decreasing land sizes in most parts of the district
- High quality milk
- Adaptability to wider agro-ecological zones and climatic conditions
- In most areas is no socio-cultural inhibition to keeping goats and utilization of its milk.
- Goats can be easily converted into cash to meet pressing domestic needs like fees, medicine etc.

## b) Challenges

- Nutrition in the upgraded dairy goat is limiting
- On farm breeding is challenging.
- Inadequate funding by donor agencies to cover most aspects of goat production comprehensively.
- There is a security risk when the goat house is separate from the main house due to incidences of livestock theft

## Activity 6: Dairy Goat Housing

### 2.1. FACTORS TO CONSIDER.

- The number of goats to be kept is important in constructing the house.
  - 1.5m<sup>2</sup> per adult doe
  - 3M<sup>2</sup> per mature buck
  - 3M<sup>2</sup> for a doe with kids- up to weaning period
- Environmental conditions so as to take care of the direction of wind
- Type of material to be used / availability
- Cost

### 2.2 Why Dairy Goat Housing & Qualities of Good Goat House

Key Qualities of a Good Goat House	Why Dairy Goat Housing
<ol style="list-style-type: none"> <li>1. It should be rain proof</li> <li>2. It should be damp-proof of i.e. dry and easy to clean</li> <li>3. Be well ventilated but not drought. Lack of vitamin C leads to before bowlegs</li> <li>4. Should not expose goats to cold especially in case of exotic breeds.</li> <li>5. Should have facilities to feed goats from indoors</li> <li>6. They should preferably be slatted. At least 1 inch or 1-2cm apart from one slut to the next or two fingers to pass through.</li> <li>7. Water should be available at the same time (water trough).</li> <li>8. It should be raised from the ground- preferably (1 ½ - 2-2 ½) feet</li> <li>9. It should have sufficient light especially if goats are kept indoors for long periods in such a case outside exercise yard have to be provided.</li> <li>10. Sub-division in the house is necessary to separate different types of animals like milking does, does about to kid, kid's weaner dealings, weaner buckling's and bucks.</li> <li>11. There should be no crowding in need for enough space per animal</li> </ol>	<p>A good dairy goat house is important to:</p> <ol style="list-style-type: none"> <li>a) To protect goats from predators (security)</li> <li>b) There controlled breeding</li> <li>c) Easy manure collection / well fed goat produces 1 kg of manure everyday</li> <li>d) Easy control of diseases mastitis, pneumonia and foot rot</li> <li>e) There is controlled feeding</li> <li>f) For proper care and management of kids, pregnant does when confined</li> <li>g) For clean milk production</li> <li>h) Ease of handling, inspection etc</li> <li>i) For hygiene purpose</li> <li>j) To protect them from adverse weather conditions e.g. rain</li> <li>k) Feeding is meant easy hence no feed wastage</li> </ol>

## 2.4. HOUSE PLAN FEATURES

Key issues	Factors to be considered & Features
1. Sleeping area: which should be: -	a) fully enclosed b) strictly rain proof c) well ventilated
2. Feeding area should be:	often with feed troughs or racks
3. Floor: which ought to be	a) Slatted b) The slab should be 1-2 cm apart but not too wide for the legs to be trapped nor too close for urine not to flow
4. feed trough	Which should be placed at least one metre above the floor?
5. Water trough	a) To be placed about 1 foot above the floor b) Should be at a spacing of 30cm per goat is recommended
6. Mineral salt	a) This should be fitted at the veranda b) Kid pen should be half the one of the Does
7. Hay stone	a) To be rooted and next to the goat house b) Sides should be open with a rack

## Activity 7: Feeding of Dairy Goats

Dairy goat Feeding Habits	Feeding Types
<ol style="list-style-type: none"> <li>Goats cannot eat directly from the ground and if they have to then they have to bend on their knees</li> <li>Goats prefer feeding at a height of between 20-120cm above raising the fore legs.</li> <li>Goats are selective feeders, they prefer some plants to others even leaves, flowers, pods or stems.</li> <li>Goats get bored if fed on the same food every day.</li> <li>Goats are wasteful feeders, if given un-chopped feeds, they will pick out and eat leaves and reject the rest.</li> <li>Goats are feeders and they will reject dairy feeds irrespective of contamination, will reject even slightly soiled food e.g. Napier with mud.</li> <li>Goats do not like sticky / mouldy /muddy /wet and dusty feed.</li> </ol>	<p>Dairy goat can feed on the following: -</p> <ol style="list-style-type: none"> <li>Sweet potato vines</li> <li>Banana leaves and peals</li> <li>Grasses (Napier etc), Tithonian, disodium</li> <li>Fodder trees like Leucaena, Calandra, mulberry</li> <li>Amaranthus hybridus</li> </ol>

### FEEDING RULES

- Feed only clean, fresh and dry fodder in order to avoid bloat, insects etc.
- Clean feed trough and water buckets daily. Dirty containers may lead to worm infestation
- Give a variety of feeds such as grasses, legumes, tree leaves and fresh kitchen remains.
- Feed goats on chopped feeds to reduce wastage.
- Feed goats at least three times a day, keep regular feeding times and have some feed in the troughs or racks for overnight feeding



6. Wilt feeds, which are wet to get rid of dew and insects. If you use molasses to improve palatability do not use too much as to make food too sticky.
7. Dusty feeds and concentrates should be wetted a little.
8. Provide fresh and clean water daily. There should always be water in the bucket.
9. Provide mineral lick always to all goats. Use products from reputable companies to ensure the goats' mineral requirements are met.
10. Feed concentrates to pregnant does, Lactating does, young kids, sick goats and leaving servicing bucks
11. Avoid overfeeding with leguminous fodder e.g. Lucerne, Leucaena, and Calandra etc.
12. Small, weak young and sick goats should be fed separately

Feed Requirement	Feed Intake	Fodder Conservation
<p>Dairy goats will eat up to the equivalent of 4-5% of their own body weight in dry matter daily. Meat goats will consume about 3%. How much a goat eats depends own it's: -</p> <ol style="list-style-type: none"> <li>a. Body weight determine maintenance requirement</li> <li>b. Breed</li> <li>c. Age</li> <li>d. Production capacity</li> <li>e. Whether its pregnant / Lactating</li> </ol> <p>Young goats eat more than elder ones because they are growing. Pregnant and lactating goats consume more than non-pregnant and non-lactating ones because they need more than food to produce milk and to enable foddors to grow</p>	<p>Goat intake Feed factor presentation factors</p> <ul style="list-style-type: none"> <li>• Goat factors: - These include human capacity, pregnancy, growing &amp; Lactation</li> <li>• Feed factors These include taste, smell, variety, moisture content, digestibility and size or form of the feed.</li> <li>• Presentation factors Which include feeding time, frequency of the fresh food, quality offered, temperature (shade), humidity, and method of presenting feed.</li> </ul>	<p>1.Grasses e.g., Rhodes, Napier etc can be preserved through sun drying and tying or ensiling Napier.</p> <p>2. Maize defoliation: -</p> <ul style="list-style-type: none"> <li>- To be dried and kept</li> <li>- Pluck one leave per week and preserve</li> </ul> <p>NB: one acre of maize produces up to 1.5 tons of fresh leaves. These leaves of it dried in the air under shade can give 500kg of material.</p> <ol style="list-style-type: none"> <li>3. Bean husks - Tied and laid them</li> <li>4. Maize stoves- Dried and preserved</li> <li>5. Cassava leaves- Dry under shade to retain quality</li> </ol>

### Feed Composition

1. Moisture content: - the higher the moisture contents the lower the growth rate and hence lower production.
2. Dry matter: - the higher the dry matter, the higher the growth rate



# Activity 8: Dairy Goat Breeds and Breeding

## 8.0 Introduction

A dairy goat farmer needs to be a bit keener than the goat farmer. Milk production requires a lot more skills and attention than traditional meat keeping. A profitable milk production program cannot be achieved without a proper breeding program. In an up-grading program, the farmers have to be very patient since genetic improvement cannot take a few weeks but rather several years.

Preamble Do we want to be goat keepers or goat breeders?

### 8.0.1 GOAT BREEDS

#### 8.2 Meat Breeds

This includes the Gallas (white), the small East African goat, the Boer (which is the biggest breed its white but neck and heads are brown).

#### 8.3 Toggenburg

- More readily available in Meru County, Vihiga, Kisumu regions. A very hardy breed and was introduced in Kenya before independence.
- Can be black or brown (chocolate in colour with white stripes on the face, tail, legs)

#### 8.4. Alpine

More readily available in central Kenya Counties of Nyeri, Muranga, Kirinyaga, and Embu in Eastern province.

#### 8.5. Mohair goats e.g. 1. Angora goat and their crosses.

This is a very hardy breed. It is brown with black stripes on the face. Its performance is similar to that of the Toggenburg.

#### 8.6 Saanen

- There are very few in Kenya.
- White and fairly large
- It is not adaptable in the tropics due to its white pigmentation and heat stress.
- Though a very high yielder it is very delicate.

#### 8.7. Dual Purpose Goats

There are mainly as mixture of breeds and are available in western Kenya, Katumani, Mtwapa and Naivasha.

#### 8.8 Cross Breeds

These are the majority in Kenya and result from mixing of different breeds within themselves and Local breeds

The current up- grading interventions in development programs result on a lot of upgrades, which have their advantages like disease tolerance, heterosis vigour is more adaptable.

## 8.9 Galla Breed

A well-built meat goat, but on selection they will give milk quite well.

Readily available in the dry areas of North Eastern Kenya district among the pastoralist communities.

## 8.10 Breeding

Breeding aspects	Rationale
<b>Why do we breed?</b>	<ul style="list-style-type: none"> <li>• To get more milk and meat and superior offspring</li> <li>• Better heat detection</li> <li>• Better conception rate</li> <li>• Fast growth rate</li> <li>• Healthy animals</li> </ul> <p>Management aspects such as determine these</p> <ul style="list-style-type: none"> <li>- Feeding and supplementation</li> <li>- Dairying</li> <li>- Deworming</li> <li>- Spraying</li> <li>- Castration, hoof trimming, housing, mineral</li> </ul> <p>Farmers can obtain 60% from breeding and 40% genetically.</p>
<b>Important Breeding Rules</b>	<ol style="list-style-type: none"> <li>a) Good breeding buck</li> <li>b) Health breeding doe</li> <li>c) Controlled mating / breeding</li> <li>d) Proper kid rearing</li> <li>e) Breeding stock selection</li> </ol>
<b>Selection and Mating</b>	<p>These are the basic tools of breed improvement, characteristics to look for – True to the type e.g. Saanen is white.</p> <p>NB. In selection you have to know what you are aiming at e.g. milk or meat.</p>
<b>Controlled Mating</b>	<p>To improve breeding standards of the dairy goats it is necessary to apply a controlled mating. Only selected males and females should be allowed to mate each other. This is only possible under zero grazing system.</p> <p>Before mating, the body condition of the male should be checked. Only physically fit does should be mated. The udders must also be checked. Any hardness indicates that the female has had a previous problem like mastitis etc. She should not be bred, as she will be unable to produce enough milk.</p> <p>Badly worn or missing teeth indicate old age &amp; such females should be wiled. Their feed intake will be reduced with consequent negative effect on the body condition and milk production.</p> <p>A female should not be mated before the age of approximately one year or about 60% of the expected fit weight.</p>

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### 8.1 Good Breeding for Bucks and Does

Good Breeding Buck	Good Breeding Doe
<ol style="list-style-type: none"> <li>1. Selection criteria:               <ol style="list-style-type: none"> <li>a. Productive breed (that is proven).</li> <li>b. Health and strong</li> <li>c. Well-developed body frame avoids cripples</li> <li>d. Two well developed testicles.</li> <li>e. Masculine appearance.</li> <li>f. Not too old (toothless).</li> </ol> </li> <li>2. NB: Only the best male from a high milk-producing doe should be used for breeding. Healthy, well-developed bucks can be used for mating from the age of approximately 1 year but young bucks should not be used in excess.</li> <li>3. Only carefully selected bucks should be used for breeding.</li> <li>4. All unwanted and inferior males should not be used for breeding and should be therefore be castrated.</li> <li>5. The two common methods are:               <ol style="list-style-type: none"> <li>a) Buldizoe</li> <li>b) Elastrator (rubber ring method)-The rubber ring method (elastrator) should be used on young males from the age of 2 weeks up to 2 months onwards.</li> <li>c) During castration, use the antiseptic and treat any skin wounds immediately.</li> </ol> </li> <li>6. Well- trained persons should only do this operation.</li> </ol>	<p>The selection of good mother goats is very important, as the kids will inherit both their mother's good and bad qualities.</p> <p><b>Selection criteria.</b></p> <ol style="list-style-type: none"> <li>a) Offspring from high milk producers.</li> <li>b) High fertility rate (good conception)</li> <li>c) Desirable body form.</li> <li>d) Good under form, with two-well developed teats.</li> <li>e) Feminine appearance.</li> <li>f) Correct body position.</li> </ol>

### 8.2 Heat Detection

Key issues	Aspects
Female	<p>Females become:</p> <ol style="list-style-type: none"> <li>a) Restless</li> <li>b) Frequently and wag their tails.</li> <li>c) The vulva becomes swollen.</li> <li>d) Discharges clear mucus.</li> <li>e) It'll mount on other females</li> <li>f) Fodder intake is less i.e. reduced appetite.</li> <li>g) Moves closer to the bucks</li> <li>h) If a buck is in a nearby pen, heat detection is easier as the doe in heat tends to move nearer the buck pen</li> </ol> <p>Checking records in oestrus cycle takes 19 to 21 days</p>
Oestrus cycle.	<ol style="list-style-type: none"> <li>a) The duration of a cycle is from 19 to 23 days. The period for successful mating is normally short, lasting about 6 to 12 hours only, although the signs of heat can last up to 2 to 3 days.</li> <li>b) The doe should be taken to the buck when the heat signs are well established, normally in the second day of heat.</li> </ol>

### Other key issues during heat detection

Gestation Period	Breeding calendar	Buck Movement
<p>Lasts about 150 plus 3 days.</p> <ul style="list-style-type: none"> <li><b>Recommended number of kidding</b></li> </ul> <p>Twice a year under very high level of management</p> <p>However, 3 kidding in two years are more practical</p>	<p>YR1JFMAMJJUSOND</p> <p>YR2 JFMAMJJISOND</p> <p>NB: 2 year = 3 kidding</p>	<p>This is done after every one and half years to avoid in breeding.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>Check records of identification from ear-tag number for sires and dams</li> <li>Check the relative distance from one-buck status to the other</li> </ol>

## Activity 9: Dairy Goat Management Practices

### 9.1 Kidding

The average gestation period is approximately 150 days. Several changes take place in the last few days before the kidding.

- Loss of appetite
- Rapid breathing
- Restlessness.
- Swollen udder, enlarged teats
- Swollen genital opening.
- Thick white discharge from the vulva.

Goats normally deliver their kids without problems. The birth can however be quite stressful for the doe. With the appearance and bursting of the water bag. The birth begins.

The normal birth position is the two front legs appear with the head of the kid resting upon them. The birth should not take longer than approximately 30 minutes. If a female has not kidded after three hours in labour, professional help must be called.

If the mother does not lick clean the kid especially the nose and mouth, the farmer must use a soft straw or clean cloth to clean and dry kid.

To prevent naval infection, the naval should be treated with iodine (or any other anti-bacteriostat).

After kidding the placenta bag appears and is normally dropped within 3 to 5 hours.

Healthy kids are normally on their feet within 10 to 15 minutes and they will find the udder by themselves. Weak kids must be helped.

The first milk a kid gets from the mother is the colostrum's, which is very rich in antibodies and vitamins and very essential for health and growth of a new-born. Without colostrum's the kids may die.

From a young age, kids should be encouraged to start feeding on grass, lay, leaves etc.

## 9.2 Weaning

The kids should be weaned at the age of approximately 14 weeks. If a kid is not well grown, then the weaning should be delayed for 1 to 3 weeks. A good growth rate during early life is very important especially for females.

## 9.3 Separation of Sexes

After the kids are weaned, it is the right time to separate the young males from the females as the young males are beginning sexually mature. Although they are not fertile, they cause a lot of harassment to females.

## 9.4 Breeding Plan

For the genetic improvement of the existing goats at farmers level, there's need for an adequate breeding plan. The farmers do not have a uniform breed of dairy goats.

# DAY THREE: THURSDAY, 15<sup>TH</sup> JULY, 2021

## Activity 10: Animal Health

### 10.1 Common Disease Conditions of Dairy Goats

This is a brief presentation on disease conditions of dairy goats of economic importance. I may not exhaust all the disease conditions in your area; therefore, it is important to consult your nearest veterinarian to confirm any disease condition suspected and the best cure for the condition. I will present this paper in the context of disease prevention. Why? Because prevention is better than cure!

#### Preventive medicine & health

Key issue	Rationale
<b>WHY?</b>	It saves money and stops suffering so can be justified on: a) Economic ground b) Humanitarian grounds
<b>WHAT?</b>	Disease or the condition of being unwell could be a) Bacterial b) Viral c) Parasitic d) Metabolic e) Nutritional f) Neonatal (From birth) g) Injury
<b>HOW DO WE PREVENT DISEASE?</b>	Keep away from disease causing agents/conditions- <b>Hygiene</b> a) Vaccination/ Prompt treatment of sick animals b) Strategic anti parasitic treatment c) Proper housing/hygiene d) Foot trimming

## 10.2 Disease Prevention Plan

Disease prevention should be planned in order to minimize the chances of disease entering into the flock. The key word is **Hygiene**.

The goat keeper's year revolves around the breeding cycle of the doe. Once mated successfully the gestation period is 150 + or – 4 days.

Take mating as the fixed point.

- 2 months prior to mating            vaccinate + foot trim + worm treatment
- 2.5 months post                    Check and if needed foot trim
- 3 months post                        dry off
- 4 months post                        Vaccinate and if needed foot trim
- 5 months post                        Kidding- treat kids navels
  - Check kids for birth abnormalities, extra teats
  - Check does udder for normal colostrum
  - Make sure kids suckle in the first hour or feed with colostrum
  - Worm doe in first 48 hours

Kidding now becomes the fixed point

4-5 days post                        Disbud kids' + foot trim doe

3 months post                        Vaccinate kids- first dose

4 months post                        Vaccinate kids – second dose

Worming- try to coincide with other procedures but depends more on the season of year and age of kids.

First worm kids at weaning (3-4 months) thereafter every month if out on pasture or every 3 months if zero grazed.

Check milk withdrawal times whenever does are wormed.

## 10.3 Common Diseases of Dairy Goats, Clinical Signs and Control/Treatment

Disease	Cause	Main clinical signs	Control /Treatment
<b>1. Worm infection</b>	Endo parasites (Round worms, liver flukes and tapeworms)	Thriftness, poor appetite, poor hair coat, slow growth, reduced milk production, loss of weight	Use appropriate treatment for worms at recommended intervals
<b>2. Pulpy kidney disease (Enterotoxaemia)</b>	Bacteria Clostridium Wenchi type B and D Infection through ingestion of contaminated material	Sudden death especially in young kids in good body condition. Unsteady gait, knuckling of the fetlocks, grinding of teeth, tremors and other nervous signs before death. Kidneys of dead animal appear rotten and pulpy.	Vaccination with appropriate vaccine.
<b>3. Malignant oedema (Gangrenous septicaemia/Braxy)</b>	Clostridium septicum Infection through contamination of wounds	Swelling of muscles, warm painful, later cool flaccid and insensitive When handled gives crackling sound.	Oxytetracyclines, Pen/Strept may be effective in early stages
<b>4. Tetanus</b>	Clostridium tetani Infection through contamination of deep wounds	Stiff stilted gait with stretched out stiff neck	Vaccination Pen/Strept, Oxytetracyclines may be effective in early stages with thorough wound cleaning
<b>5. Anthrax / Black quarter</b>	Bacillus anthracis and black quarter bacteria through ingestion of bacterial spores	Sudden death in anthrax and sudden swelling and stiffness of the heavy muscles of the thighs, rump shoulder or neck in black quarter	Vaccination with Black quarter- anthrax vaccine every 6 months in areas where disease is prevalent
<b>6. Peste des Petits Ruminants (PPR)</b>	PPR virus	Pus and mucus secretions from the mouth, eye and nostrils, with foul smelling diarrhoea and deaths of many affected animals	Vaccination with PPR vaccine
<b>7. Goat pox</b>	Goat pox virus	Skin eruptions in the form of nodules, pustules and scabs all over the body. Most affected animals die.	Sheep and goat pox vaccine
<b>8. Foot and mouth disease</b>	Foot and mouth disease virus (There are 7 serotypes and many subtypes)	Excess salivation and blisters in the mouth and feet which erupt to leave raw painful ulcers	Foot and mouth vaccine. (Specific serotype in consultation with local vet office)

<b>9. Rift valley fever</b>	Rift valley fever virus	Abortions in pregnant females especially after rainy season with abundant mosquitoes.	Rift valley fever vaccine whenever outbreaks are reported in the regions by the local veterinary
<b>10. Rabies</b>	Rabies virus NB: Disease can infect man from saliva of infected animal thru open wound	Excessive salivation, overexcitement and aggressive behavior, paralysis of limbs and death	Rabies vaccine (never use live vaccine)
<b>11. Orf (contagious ecthyma)</b>	Orf virus	Painful swellings around the mouth and eyes of mainly young animals	Gentian violet-Antibiotic aerosol sprays may help hasten the healing
<b>12. Contagious Caprine pleuropneumonia (CCPP)</b>	Mycoplasma	Pneumonia, coughing, fever and death	CCPP vaccine
<b>13. Milk fever</b>	Low blood calcium in goats during late pregnancy, immediately after kidding, or any time in heavy milk production	Lack of appetite, laziness, slight tremors, in coordination, knuckling of the hind limbs, recumbence, paralysis and coma	Calcium borogluconate injection
<b>14. Pregnancy toxemia (Ketosis)</b>	Sudden energy deficit during the last month of pregnancy. Could be brought about by inability of the animal to eat enough due to poor feed, bad weather, defective teeth etc This affects mainly over fat goats	Laziness, abnormal high head carriage, apparent blindness, high stepping and stumbling gait, excessive ear movement, slight generalized tremors of the neck causing nodding movements of the head, recumbence, coma and death	Subcutaneous injection of glucose 20% solution
<b>15. Acetonemia (Post kidding Ketosis)</b>	Severe energy deficit in high yielders at the critical high lactation period 3-6 weeks after kidding	Sudden laziness, inappetence to concentrates, empty tucked up rumen, shiny hard faeces, tottery hind quarter gait, death	Subcutaneous or intravenous injection of glucose 20%
<b>16. Grain overload (Acidosis)</b>	Excessive consumption of grains, unga or other high energy feed swamp the normal rumen bacteria which die off leaving only lactic acid producers. Excessive lactic acid and toxic acidic products of degenerated normal rumen bacteria absorbed in to the blood stream.	Laziness, lack of appetite, temperature may drop, abdominal pain, panting and grinding of teeth, diarrhoea, recumbence and often death	Baking powder (Sodium bicarbonate) drench may help in early stages to neutralize acidity, Kaolin drench, antibiotics and multivitamins injection
<b>17. Bloat</b>	Excessive consumption of lush green pastures, especially Lucerne.	Excessively distended rumen, with laboured breath, if not attended early enough may lead to death.	Anti-bloat medications or liquid paraffin given orally. Relieve bloat by puncturing the mid rumen using 14G - 2inch needle
<b>18. Mastitis</b>	Mainly due to bacterial infection (Staphylococci)	Excess swelling of udder, clotted foul smelling milk	Intra mammary treatment antibiotics. Milking hygiene
<b>19. External parasites</b>	Ticks, fleas, mange, lice	Itching, scratching, restlessness, rough and poor hair coat, loss of condition	Ivomec in non-milking animals
<b>20. Ringworm</b>	Fungal infection	Circular shaped itchy skin lesions	Griseofulvin



## 10.4 Vaccination

Vaccination aims to protect against various diseases prevalent in goats. The following table gives a rough guide on the vaccines which may be recommended to control various disease conditions in dairy goats in this region.

Disease condition	Vaccines	Dose	Programme	Administration
<b>1. Diseases caused by clostridium bacteria in particular Pulpy kidney disease (Enterotoxaemia) and tetanus</b>	Lambivac Lumpy kidney & Tetanus vaccine Tasvax 8 Etc	Usually, 2ml	Primary vaccination: 2 doses 4-6 weeks apart Boosters: Every 6 months Kids from vaccinated does: start at 10-12 weeks of age Kids from unvaccinated does and those not given colostrum: start at 2-4 weeks of age Pregnant does: 2-4 Weeks before Kidding	Thoroughly shake the vaccine and give subcutaneous in the neck 2-3 inches behind the ear.
<b>2. Anthrax and black quarter</b>	Blanthrax vaccine	1 ml	Single injection annually except in out breaks when six monthly vaccination is recommended	Thoroughly shake vaccine, give subcutaneous in neck region.
<b>3. PPR</b>	PPR vaccine	1 ml	Single injection in areas threatened by the disease	Subcutaneously in the neck region
<b>4. Sheep and goat pox</b>	Sheep and goat pox vaccine	1 ml	Single injection	Consult local vet
<b>5. Foot and mouth</b>	Foot and mouth vaccine	1 ml	Vaccinate on the recommendation of the local veterinarian for the correct serotype in the area	Thoroughly shake vaccine, give subcutaneous in neck region
<b>6. Rift valley fever</b>	Rift valley fever vaccine	1 ml	Vaccinate only when there are threats of outbreaks	Consult the local veterinary office
<b>7. Rabies</b>	Rabies vaccine	1 ml	Vaccinate adult animals annually (Read instructions on the vaccine bottle for vaccination of kids)	Read the manufactures instructions or consult your local vet
<b>8. Contagious caprine pleuropneumonia</b>	CCPP vaccine	1 ml	Vaccinate whenever there are outbreaks or threats of outbreaks in the area	Inject subcutaneous in neck region Consult local vet office

## 10.5 Anthelmintic (De-wormers)

### Purpose

To control infection of goats with gastro intestinal nematodes, lungworms, tapeworms and liver flukes. Worms cause severe economic losses to farmers which are not realized immediately but are great cumulatively in terms of slow growth and overall production (up to 40% reduction), reduced milk yields (up to 15 % reduction) and in severe cases death not to mention financial losses incurred in treatment.

### **Points to note:**

No single system will be suitable for all goat rearing systems.  
Money is wasted if

- i. Deworming is not done at the correct time
- ii. Use of unsuitable products
- iii. Inaccurate estimation of goat weight leading to under dosing

Newly kidded goats, kids and debilitated animals are most susceptible therefore important to target these groups.

Good husbandry, proper feeding and hygiene reduce the effects of parasites.

## 10.6 Worm Control Systems

Issue	Rationale
1. Pasture grazed/ browsed goats	If possible rotate goats from one paddock or area every 3 months Keep clean grazing / browsing areas for kids or graze /browse ahead of the adults Deworm every 3 months strategically immediately after the wet and dry seasons
2. Zero grazed goats	Deworm at kidding time and mid lactation Which anthelmintic to use? Anthelmintic fall into various drug groups. To avoid resistance developing it is best to change each year to a drug in a different group. Present anthelmintic basically belong to 5 main groups namely; a) Fenbendazole and mebendazole b) Levamisole c) Niclosamide d) Oxytocamide e) Ivermectin f) Thiophanate
3. Choice of drug will depend on	Cost- includes cost of container Efficiency- activity against inhibited larvae, tapeworms, liver flukes etc Ease of administration- drench, paste, powder, pellets, spot on/ pour on, injection Milk with holding times- 0-3 days (read manufacturers recommendations) Meat with holding times- Up to 14 days Examples of anthelmintic for the control of stomach and intestinal worms, lungworms tapeworms and liver flukes in goats:

## 10,7 Type of drugs & Effectiveness

Chemical	Trade names examples	Effective against				With holding period	
		Gut worms	lungworms	Tapeworms	Liver flukes	Meat	Milk
1. Fenbendazole	Panacur, Panacur paste	+	+	+	-	14	3
2. Mebendazole	Ovitelmin	+	+	+	-	7	1
3. Levamisole	Nilverm	+	+	-	-	3	1.5
4. Niclosamide	Mansonil	-	-	+	-	-	-
5. Ivermectin	Ivomec	+	+	-	-	14	?
6. Thiophanate	Nemafax	+	-	-	-	7	3
7. Oxytocanide	Zanil	-	-	-	+	14	0
8. Levamisole + Oxytocanide + cobalt	Nilzan plus	+	+	-	+	14	1
9. Thiophanate	Nemafax	+	-	-	-	7	3

**Do not treat with ivermectin during lactation or within 28 days of commencement of lactation**

# Activity 11: Record Keeping in Dairy Goats

## RECORD KEEPING

### Why records?

- Enables the farmer to record all activities undertaken on the farm in a systematic manner.
- Helps to determine the profitability of the farm.
- Assists in farm planning.

<b>Rational for Keeping Records</b>	<b>Types of Records</b>
1. Feed production records	a) Feed production records
2. Purchase records	b) Milk production records
3. Milk production records	c) Sales records
4. Treatment/health records	d) Breeding records
5. Service records	e) Kids rearing records
6. Birth dates	
7. Birth weights	
8. Buck and doe	

### a) Feed production records

- Field preparation
- Amount and types of feeds per animal per day
- Amount of feeds brought into the farm

### Feeds brought into farm

<u>Date</u>	<u>Activity</u>	<u>Cost (Kshs)</u>
3.8.2013	70kg dairy meal	1,500/=
3.8.2013	2kg mineral salt	200/=
6.8.2013	Ploughing – 1 acre	2,000/=
8.8.2013	Weeding @ 100/=	300/=

### b) Milk production records

Does name .....

Date of kidding.....

<b>Date</b>	<b>Milk Yield Litres</b>			<b>Daily Concentrate(kgs)</b>
	<b>AM</b>	<b>PM</b>	<b>Total</b>	
3/8/2013	2	2	4	0.5
4/8/2013	2	2	4	0.5
5/8/2013	2	2	8	1
Total				

## Sales Records

How much milk is sold on daily basis and at what price.

Date	Home Consumption Litres	Sold Litres	Price / Litre	Total Price
3/3/2013	1	2	60	120
4/3/2013	1	2	60	120
5/3/2013	1	2	60	120
6/8/2013.....31/8/2013	26	52	60	3,120
<b>Total</b>	<b>29</b>	<b>58</b>	<b>60</b>	<b>3,480</b>

### Total earning from goat

Home consumption	29 litres x60	=	1,740
kid	31litres x 60	=	1,860
Sales	<u>58 litresx 60</u>	=	<u>3,480</u>
<b>Total</b>	<b><u>118 litres x 60</u></b>	=	<b><u>7,080</u></b>

### **Other Records**

- Breeding records
- Banking records
- Cash book
- Kid Rearing records
- Inventory records

### **Breeding records**

<b>Buck (same as Doe)</b>	<b>Kid rearing records</b>
<ul style="list-style-type: none"><li>▪ The buck has a card with all the required information.</li><li>▪ The card can be obtained through the DGAK Assistants</li></ul>	<ul style="list-style-type: none"><li>▪ Record the date born</li><li>▪ Birth weight</li><li>▪ Progressive weight gain</li><li>▪ Quantity of milk given to kids</li><li>▪ Date weaned</li></ul>

### **Inventory**

This includes assets and liabilities

## ANNEX 1: LIST OF PARTICIPANTS AND WORKSHOP FACILITATORS

### 1.1 LIST OF ATTENDANCE -MWISEBELO VILLAGE, EMUHAYA SUBCOUNTY

	NAME	MOBILE NO	GROUP
1	MARTHA ONGOCHE AMWAYI	0798812066	ABELWATSI
2	PETRONILA NAFULA WABWILE	0700725967	ABELWATSI
3	ROSELITA MUSUNGU	0724044949	ABELWATSI
4	RESPAH AYITSO ESIKUMO	0712808955	ABELWATSI
5	ALICE ANDAYI ASHUCHI	0713454925	ABELWATSI
6	RUPAI AYUMA OKILI	0759338147	ABELWATSI
7	EUNICE ANGAYA BEDIA	0114505838	ABELWATSI
8	JANET ONGAYO KILIOPA	0748654244	ABELWATSI
9	HELLEN ACHIENG ODERO	0715442399	ABELWATSI
10	JANET KAVUTSA OTIENO	0725893254	ABELWATSI
11	MARGARET ACHUNGO OMIELE	0726149789	ABELWATSI
12	GAUNDETIA ACHELE AKWANA	0706556026	ABELWATSI
13	JUDITH MUNAI TOBIAS	0720950932	ABELWATSI
14	OMANI MUTUMILA	0797111382	ABELWATSI
15	AINEAH AMBEBA WANDA	0724833072	ABELWATSI
16	ZACHAYA KWENDO		ABELWATSI
17	DAMARIS AFANDE	0728743143	LIVESTOCK OFFICER/DEPARTMENT OF LIVESTOCK, TRAINER DAIRY GOAT ASSOCIATION OF KENYA
18	BENTA OPEYO	0721363346	KUMEA

### 1.2 LIST OF PARTICIPANTS FOR VIHIGA SUBCOUNTY

NO.	NAME	MOBILE NO	GROUP
1.	ABIGAEK KADENYEKA SHIVAJI	0719540056	NEW APOSTOLIC BUKUGA
2.	JANE KIDAKE	0714261386	NEW APOSTOLIC BUKUGA
3.	MARY VIHENDA ALEKWA	0717875768	NEW APOSTOLIC BUKUGA
4.	CATHERINE WANGARE ODANGA	0701522294	NEW APOSTOLIC BUKUGA
5.	RONICAH VIHENDA AHERO	0115668375	NEW APOSTOLIC BUKUGA
6.	CHRISTINE WNJALA MOENDO	0715112078	NEW APOSTOLIC BUKUGA
7.	SARA VOSEREZA BULIMO	0712229084	NEW APOSTOLIC BUKUGA
8.	PERISILA JAMENYA MUNGORE	0725557843	NEW APOSTOLIC BUKUGA
9.	BERNARD KEYA	0701009530	NEW APOSTOLIC BUKUGA
10.	MARTHA ATISA OCHIENGI	0702456236	NEW APOSTOLIC BUKUGA
11.	JULIUS ALUKAYA ONDUNYI	0701068468	NEW APOSTOLIC BUKUGA
12.	JOHN MABULI ODANA	0792239369	NEW APOSTOLIC BUKUGA
13.	MARTHA OSIEKO JOSHUA	0713235614	NEW APOSTOLIC BUKUGA
14.	FANUEL IDALIA	0723241666	NEW APOSTOLIC BUKUGA
15.	JAEL VUHASIO	0709689766	NEW APOSTOLIC BUKUGA
16.	IBRAHIM ODANGA	0711136472	NEW APOSTOLIC BUKUGA
17.	ALEX ADALA	0722946023	LEAD TRAINER, DEPARTMENT OF LIVESTOCK & DAIRY GOAT ASSOCIATION WESTERN COORDINATOR



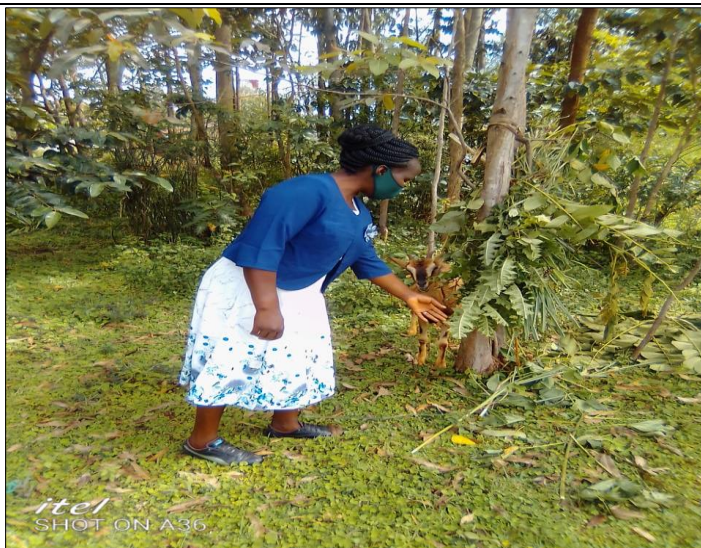
**ANNEX 2A: WORKSHOP PHOTOS FOR MWISEBELO -EMUHAYA SUBCOUNTY**



**1. Participants at the Mwisebelo New Apostolic Church**



**2. Plenary presentation during training sessions**



**3. Facilitator identifies vegetation feeds for the goats**



**4. Participants being inducted to feeding management for dairy goats**



**5. Participants being inducted on livestock diseases**



**6. Participants in plenary sessions**



## WORKSHOP PHOTOS



**7. Facilitator making presentations on dairy goat management**



**8. Participants listening to facilitation**



**9. Participants with various vegetation feeds for the dairy goats**



**10. Participants in open classrooms during plenary presentations**



## ANNEX 2B: WORKSHOP PHOTOS FOR VIHIGA SUBCOUNTY



1. Participants in plenary session



2. Participants listening to sessions



3. Facilitator arriving for sessions



4. Participating in sessions



5. Group photo of participants & key facilitator

### ANNEX 3: DAIRY GOAT FARMERS TRAINING TIME TABLE

**DATE: 13<sup>TH</sup> JULY,2021 to 15<sup>TH</sup> JULY,2021**

DAY	9 .00 – 9.30 am	9.30 am – 11 am	11.00am – 1.00pm	1.00 pm – 1.30 pm	1.30 pm – 3.00pm
<i>Day 1</i>	Registration, Introduction/ Official opening  Seminar Objectives	Fodder Establishment and management Fodder Conservation and utilization	<i>Dairy goat Housing</i>	B R E A K	Dairy Goat Nutrition/ Feeding of dairy goats
Day 2	Recap	Introduction to breeds and breeding	<i>Routine Management</i>		Disease control
<i>Day 3</i>	Recap	Record keeping	DGAK Registration process/ Membership		Practical session

N/B The program will run for three days each for the Emuhaya and Vihiga sub counties