

# Community breeding to improve poor farmers' flocks

RIU

## Validated RNRRS Output.

Creating local associations and community-based buck stations allows local farmers to undertake breeding programmes designed to improve their goat flocks. Small-scale resource-poor livestock keepers usually can't access government services for breed improvement, and this limits their ability to improve the productivity of their animals. In Kenya, however, new schemes have overcome this by providing poor livestock keepers with training, and by setting up community-based buck stations and supporting the establishment of local community breeding associations. The model has proved popular and is now being used in a range of countries. Examples include Ethiopia, Uganda, Tanzania, Rwanda, Burundi and Kenya.

Project Ref: **LPP19:**

Topic: **2. Better Lives for Livestock Keepers: Improved Livestock & Fodder**

Lead Organisation: **FARM-Africa, Kenya**

Source: **Livestock Production Programme**

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## Description

**LPP19**

## Research into Use

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## Geographical regions included:

[Burundi](#), [Ethiopia](#), [Kenya](#),  
[Rwanda](#), [Tanzania](#),

## Target Audiences for this content:

[Livestock farmers](#),

## A. *Description of the research output(s)*

### 1. Working title:

Community based goat productivity improvement under smallholder production systems, using the FARM-Africa Model.

### 2. Commissioning Programme:

Livestock Production Programme (LPP)

### 3. R number and partners:

FARM-Africa's Community based farmer led goat improvement model was developed from 1996 to 2004 in Meru. It was developed by FARM-Africa through collaborative research that involved the University of Nairobi, Kenya Agricultural Research Institute and the Ministry of Livestock and Fisheries Development through its extension department. DFID through LPP sponsored the research under project **R7634** and the contact persons were Camillus Ahuya (FARM-Africa), Okeyo Mwai (University of Nairobi) and Festus Muriithi (Kenya Agricultural Research Institute).

### 4. Description of the outputs

Community based **goat** improvement model addresses the problems of **small scale resource poor livestock keepers** in sustaining a crossbreeding programme by themselves: their small flock sizes and consequent unavailability of good quality genetic breeding material; and their lack of access to government services. The model involves establishing **decentralised** community based buck stations for **cross-breeding** and breeding units for the production and availability of pure-breds, as well as the establishment of an autonomous breeder's association (e.g. Meru **Goat Breeders Association** (MGBA) to maintain and oversee the breed improvement activities while linking up with other associations and the national Kenya Stud book.

The advisory services are given by the extension service to supplement what MGBA provides. The model therefore links extension staff farmers and their association MGBA and the scientists in the research institutes and universities. The model uses group approach which ensures that the livestock population available is amenable to improvement, since the group members individual animals are pooled together to form one flock for improvement. The group approach also enhances the extension message delivery and gives access to high quality improvement material to poor farmers and sustainability is assured.

The model empowers the smallholder farmers to take control of the livestock improvement activities like buck movement; recording, show organization, setting standards and training new farmers and also ensuring that the standards are maintained.

In order to up-scale this model in an effective way, the following issues needed to be addressed, hence formed the outputs of the R7634 project:

- Appropriate **breed improvement** levels and **goat management technologies** were identified for resource poor farmers;
- Appropriate **breed improvement objectives** and **methods** were identified from available options;
- Community based goat breed improvement systems and farmer organisations were **developed** in target **institutions** (MGBA and local extension services);

The first two outputs contributed to optimization of the FARM-Africa's goat breeding model, whereas the third output contributed to the institutional framework necessary for successful implementation of the model. In the rest of this evaluation we will refer to these general outcomes as '**the model**' and the '**institutional framework**' (or more specifically **MGBA** or MoL&FD extension services).

**Key words** Breed societies / Associations, Goat, institutional framework, model, breed improvement objectives, goat management technologies.

[Word count 368]

## 5. Types of outputs being described by community based goat improvement model

Product	Technology	Service	Process/ Methodology	Policy	Others
	X	X	X		

## 6. Focus on commodities

Community based goat improvement focussed on improving the productivity of the local goats through upgrading them with imported dairy goat genotypes, and on improved management of dairy goats to improve the living standards and livelihoods of resource poor livestock keepers in the Eastern highlands of Kenya and beyond. The commodities focussed on therefore are goat meat, goat milk, and manure. The model, though developed in Meru, is being used in many districts in Kenya and many NGOs and farmer groups and individuals have adopted it. Ripples international is using it in Meru. It can also be used in other species like sheep.

## 7. Production Systems

R7634 focussed on semi-arid, high potential and forest-agriculture production systems. But since zero-grazing is the preferred management system that is promoted through the FARM-Africa approach, these improved goats can be kept in a wide range of production systems, provided enough fodder is available or produced by the livestock keepers.

Semi-arid	High potential	Hillside	Forest agriculture	Peri-urban	Landwater	Tropical
X	X	X	X	X		X

## 8. Farming Systems; Community based goat improvement model focuses on the following farming systems

Smallholder rain-fed	Irrigated	Wetland rice-based	Smallholder rain-fed dry/cold	Dualistic	Coastal artisanal fishing
X	X		X		

In R7634, the focus was on smallholder rain-fed and dry/cold. FARM-Africa is now promoting the goat breeding model in semi-arid areas of Kitui-and Mwingi Districts; while Kwale development programme is using it in smallholder rain-fed humid production system in Kwale along the Kenyan coast. Through the extension staff of the Ministry of Livestock and Fisheries Development (MoL&FD) it is now being used in over 50 districts out of 114 districts in Kenya.

## 9. Adding value to community based goat improvement model

To add value to the model, additional focus should be given to: the goat breeders' ability to identify the individual goat genotypes (selection), and keep proper records, in order to obtain registration with the Kenya Stud Book. This registration will facilitate exportations of breeding stock, resulting in higher (premium) prices for the smallholder farmers. Promoting the use of proper record keeping will go far in avoiding/controlling inbreeding, which has always been a hindrance under smallholder production systems.

Outputs of R2555: The use of farmer-to-farmer extension (FFE) model will enhance the spread of this model among small-scale producers.

Outputs of R6619: box-bailing would enhance the use of farm by-products in feeding the improved goats to increase their production;

Outputs of R7798: Tannins to reduce parasitic infections. The use of fodders that contain tannins (e.g. acacia pods) will reduce the incidence of worm infestations, which has been one of the constraints limiting goat production.

Outputs of R6153 & R5732: Adoption of planted forage for small-holder dairying in Kenya. The outcomes of this research also have relevance for fodder production for dairy goats.

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## Validation

### B. Validation of the community based goat improvement model

#### 10. How and by whom was the goat improvement model validated?

**FARM-Africa** and Ministry of Livestock and Fisheries Development (**MoL&D**) first implemented the model

starting with ten with 10 groups in Meru (in 1996). The focus then was on dairy goats. It was thought the F1 (½ exotic; ½ indigenous) would produce more milk (higher hybrid vigour). By 1998 there were already 44 groups. During several evaluation workshops farmers expressed their preference for dual-purpose goats and in fact **farmers** had already adapted to breeding's ¾'s (¾ exotic; ¼ indigenous) which grew faster and coincidentally produced more milk than the F1s!

The success of the model has largely depended on **group approach** which ensured buy-in and, capacity-, awareness-, empowerment- and confidence building of the primary stakeholder farmers and change of attitudes towards gender roles. Empowering and enhancing the capacity the local institutions – in particular MGBA and the extension services - to run, manage and supervise a goat improvement initiative was also crucial. And last but not least: to enhanced collaboration between the players – farmers, extension staff and the officials of MGBA.

Consultants were hired by FARM-Africa to evaluate the programme, including its technical aspects: e.g. Meru Dairy Goat and Animal Health Care Project, Phase 2 - *Mid Term Review* (2001), by Cary Hendy. The papers produced under this project (**R7634**) also contributed to the validation of the model by looking at the activities and lessons learned from the '*Meru and Tharaka Nithi Dairy Goat and Animal Healthcare Project*'. The research focussed on factors that determine the adoption, acceptance of technologies considering resource endowments, production systems and the genotypes involved. The present replication of the model by FARM-Africa (and MoL&FD) in Kenya and surrounding countries, is expected to yield lessons pertaining to the use of the model in other contexts and agro-ecological zones.

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#### 11. Where, when and in which production and farming systems, has the community based goat improvement model been validated?

The model was implemented by FARM-Africa in Meru, Eastern Kenya from 1996-2004. However from 2001 farmers groups and individuals that did not belong to FARM-Africa started implementing the model after learning from farmers that had been trained by FARM-Africa (farmer to farmer extension!). The farmers were spread across various production systems from upper midland to lower midlands UM2-LM4 within Meru. However the model has been embraced by NGOs across the region and is constantly being used in most production systems found in East African region.

where	when	production system
Meru-Kenya	1996-2004	High potential
Vihiga-Kenya	2003-2006	High potential
Makueni	2002-2005	Semi arid
Kitui Mwingi	2004 to date	Semi arid
Embu/Mbeere	2002-2004	Semi arid
Mbale/Sironko	2004-2006	High potential rain –fed
Burundi	2003-2004	High potential rain –fed
Rwanda	2002-2004	High potential rain –fed
Tanzania	2000 to date	High potential rain -fed
Isiolo	2000	Semi arid

The spontaneous demand driven spread of this model, can be considered as its **validation** by its targeted clientele and organizations working with them: smallholder poor livestock keepers, resource poor households, women headed households, HIV orphans and people with low literacy levels and AIDS distressed families (e.g. Ripples International RI in Meru, CPDA in Vihiga).

[Word count 196]

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## Current Situation

### C. *Current situation of using the community based goat improvement model*

#### 12. How the model is currently being used and people currently using it

The current users of **the model** are farmer self help groups - not only those that were initiated in Meru, but also some that were spontaneously formed by farmers in the wider East-African region. **MGBA** is promoting the improved dairy goat technology and building the capacity of its members. **MGBA** through its officials has continued to maintain and create new breeding stations and buck stations and also training new breed inspectors and judges within and outside the Meru community.

FARM-Africa is currently using the community based goat improvement **model** in under its Smallholder Development Programme in: Kitui and Mwingi Districts of Kenya, Babati District in Tanzania and Mbale and Sironko Districts in Uganda, the Government of Kenya (MoL&FD) is using **the model** through its extension department (including NALEP, the National Agricultural and Livestock Extension Programme) resulting in the formation of common interest groups on dairy goats across the country. Furthermore the model is used in several bilateral projects: i.e. the African Development Bank (ADB) sponsored Arid and Semi-Arid Based Livestock and Rural Livelihoods Support Project (in 22 ASAL Districts) and the IFAD funded projects: Smallholder Dairy Commercialisation Project (in 14 Districts) and Mount Kenya East Pilot Project (MKEPP).

There are a number of NGOs that are using the model; these include DANIDA sponsored Kitui Agricultural Programme (KAP), in Kitui District (Kenya), Plan International in Mbeere and Embu Districts (Kenya), Catholic Relief Services (CRS) in Burundi, Environmental Alert in Uganda.

[Word count 239]

#### 13. Places where the model is being used

The community based goat model is being used in many districts in Kenya (Meru- Central, South and North, Mbeere, Embu, Makueni, Kitui, Mwingi, Vihiga, Kakamega, Kisumu, Migori, Koibatek, Kerio valley, Uasin Gishu, Nakuru, Isiolo, Kiambu, Thika, Kwale and Kilifi) and also outside Kenya, in Ethiopia, Uganda, Tanzania and Rwanda. In all these places it is perceived as the most sustainable goat improvement strategy capable of pulling the resource poor farmers out of poverty.

*[Word count 73]*

#### **14. The scale at which the model is currently being used, speed with which it was established and whether usage is spreading.**

Scale by which the model is being used can be assessed by the number of farmer groups created and the number of improved goats produced and/or sold by farmers and other beneficiaries. This scale is increasing everyday. The model started in Meru with only 10 groups 1996, which increased to 44 by 1998. Since then, 20 farmer groups are being formed annually and there are close to 200 groups with membership of up to 3200 members. Over 60,000 buck services have been recorded since 1996 and over 45,000 crosses have been produced. While only 3000 improved goats' sales have been recorded by FARM-Africa or MGBA, it is estimated that over 10,000 improved goats have been sold (an average of 3 per MGBA member).

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#### **15. Programmes, platforms, policy and institutional structures that have assisted promotion and adoption of the community based goat model.**

FARM-Africa works in collaboration with the Ministry of Livestock and Fisheries Development (MoL&FD). Through this collaboration, an appropriate supportive institutional framework and platform has been provided for the promotion and up-scaling the model to a wider geographical area for its usage and further development. Programmes that have assisted in its promotion include National Agriculture and Livestock Extension Programme (NALEP), Mount Kenya East Pilot Project (MKEPP), Makueni Agricultural Programme (MAP) and Kenya Agricultural Productivity Project (KAPP).

Several stakeholder workshops were held at different levels (District, Provincial and National) with potential users. This gave an opportunity for the model to be discussed and adopted by the entire MoL&FD extension service.

The development of the appropriate goat technology has been supported by the University of Nairobi and Kenya Agricultural Research Institute (KARI).

Other local platforms include agricultural shows and exhibitions, the process of (meetings for) formulating new Livestock related Policies (e.g. Strategy for Revitalization of Agriculture (SRA) and National Livestock Development policy.

In the East-African region the model has been discussed and promoted at several professional **forums**: Eastern Africa Goat Development Network (EAGODEN), Tanzania Goat Network (TAGONET), Uganda Goat Development Network (UGONET) and Kenya Goat Development Network (KEGODEN).

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## **Current Promotion**

**D. Current promotion/uptake pathways****16. Current promotion of the community based goat improvement model, the people involved and scale of current promotion.**

The model is being promoted in Kenya through **FARM-Africa's** Training and Advisory Unit which has trained over 100 government extension staff and development workers in Community Based Goat Improvement and Evaluation. FARM-Africa is also promoting the model outside Kenya, through its Smallholder Development Programme (see Q12). FARM-Africa has produced a wide range of promotional materials e.g. videos, pamphlets and posters and has made scientific presentations at international and national fora.

The **MoL&FD** promotes the model through its extension department in Eastern, Western and Nyanza Provinces.

**Several other Kenyan organisations** also promote the use of this model:

- University of Nairobi in their courses on sheep and goat production;
- KARI at their demonstration sites;
- NGOs Africa Now ( Kisumu), CPDA (Vihiga), Food for the Hungry International (Marsabit), Farming Systems (Nakuru);
- Agricultural Society of Kenya (ASK) through livestock shows.

**Internationally**, the model was promoted through scientific presentations at:

- British Society for Animal Science – 2002, Mexico;
- Global Forum for Agricultural Research Conference – 2003, Senegal;
- International Goat Association Conference – 2004, South Africa,
- LPP conferences on small stock: Tanzania (2001); Kenya, (2003); Uganda (2004); South Africa (2005);
- EAGODEN conferences: Uganda (2002); Kenya (2004).

*[Word count 196]*

**17. Current barriers (institutional, policy, marketing, infrastructure or social exclusion) preventing or slowing down the adoption of the model.**

**Social issues** – some communities do not accept goat milk, thinking it has a bad smell or taste. Men usually control household resources and women cannot sell a goat without their husbands' consent. Goats are often considered inferior to larger ruminants and in some cultures women are not allowed to eat goat meat.

**Policy** - livestock policy has traditionally paid little attention to goats. No policy guidelines exist for import and export of goats and goat products. Community animal health workers (CAHWs) are also not yet legally recognised.

**Capital constraints** – farmers cannot access credit due to lack of collateral thus they do not have capital to scale up their goat enterprises.

**Infrastructure** – lack of record keeping and limited registration with the Kenya Stud Book (KSB) is a serious constraint slowing down the formalisation of the improved goat genotype.



**Markets** – no structures have been established for the marketing of improved goats and market information is generally lacking for goats and goat products.

**Institutional & Technical support** – Associations like MGBA lack the capacity to produce enough breeding material (pure Toggenburgs) to enable scaling up of the model. They also need support in selection for the breed improvement of the improved genotype.

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## **18. Changes needed to remove or reduce barriers to adoption (include perceived capacity related issues)**

Changes that are needed to improve adoption are:

- Advocating the development of a national livestock policy that includes clearly defined goat development strategies under smallholder production systems;
- Developing more focussed extension messages or packages on goat production, that address social and cultural issues addressed above;
- Advocating the provision of credits by existing financial institutions to farmer self help groups (based on social-collateral);
- Create appropriate market infrastructure for marketing of improved goats and goat milk;
- Linking farmers to market information systems (Use of outputs from R2555 could enhance this);
- Establishment of demonstration plots and multiplication farms across the region and most production systems, and encouraging study tours and visits among farmers within and outside the district could improve the adoption of the community based goat improvement model;
- Given the demand for improved goats that is already there (in the region) it is important to boost the capacity of the farmers associations (such as MGBA) to produce more improved genotypes and do the necessary selection.

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## **19. Lessons learnt about ways to get the model used by the largest number of poor people**

The group approach helps in ensuring that the model is used and spread among many farmers within a very short period. The national dairy goat population remained at 40,000 for very many years, but with the adoption of the model, about 50,000 improved dairy goats have been added to the national population within the last six years. Through partnerships and participatory approaches farmers quickly develop ownership which enhances sustainability. Outputs of R2555 have also shown farmers capacity to own and spread information and knowledge for enhancing adoption and spread of the model. R7634 has also shown that even poor farmers, when properly facilitated with skills and new technologies can adopt, implement and spread the model fast enough within the community. Participatory approaches are also good for the community based farmer led goat improvement model. Establishment of strong linkages with collaborators and service providers to ensure the model is adopted and used effectively while emphasizing capacity building.

*[Word count 156]*

## Impacts On Poverty

### E. *Impacts on poverty*

#### 20. Formal poverty impact studies:

Impact assessment, Karen Tibbo, Nov 1998

Social and Institutional Impact Assessment, Wambui Kairi, Nov 2003

Impact Assessment Report of Meru and Tharaka-Nithi Dairy Goat and Animal Health Care Project, Dr Olubayo, Nov 2003

#### Less formal Studies that include some aspects of impact:

Wealth Ranking Exercise Report, Henry Kimathi, Oct 2000

- Meru Dairy Goat and Animal Health Care Project, Phase 2 - *Mid Term Review* (2001), by Cary Hendy
- *End of Project Report, FARM-Africa, 2004*

Case studies on Impact by FARM-Africa (see website)

FARM-Africa project monitoring reports (Unpublished)

#### 21. Positive impacts on livelihoods: how the poor have benefited from the application of the goat improvement model

##### à **Positive impacts on livelihoods**

The above studies have demonstrated changes in household incomes and living standards through the sale of dairy goats and goat products. Farmers have been able to pay medical bills and school fees, build houses, get piped water and buy dairy cattle.

**Impact on farmers' leadership skills and knowledge** - Capacity building in group dynamics and dairy goat husbandry has improved farmers' understanding of local and national issues, making them better able to defend their rights and manage their natural resources. They can also provide community leadership on various issues including health and the environment.

**Human benefits** - Knowledge and skills in production and management of improved dairy goat genotypes has (anecdotally) reduced malnutrition among farmers' children due to drinking the goat milk. Study tours for farmers have increased their broader understanding of development.

**Social benefits** - Community empowerment through group approach has led to increased self confidence among farmers who are therefore able to make informed decisions.

**NRM benefit** – Farmers have been able to improve crop production and increase soil fertility through use of goat manure.

##### à **For whom has the impact been positive?**

The majority of private breeders (who have individually engaged in this activity) are in the **moderate poor** class. When a goat improvement programme enters their area, this group can access the new livelihood opportunity and organise themselves into farmer groups. The **extremely vulnerable** were the people originally targeted for a goat improvement programme. They received training (skills & knowledge) and fodder tree seedlings and benefited from group credit, while some of the most vulnerable cases also received local goats. This has enabled some to move out of extreme poverty into the moderately poor class. The **extremely dependent** (elderly and disabled) can probably not keep goats themselves, but benefit indirectly, from increased milk in the community which 'trickles-down' to them (from their neighbours) and maybe increased charity from goat breeding association members that are now better-off.

à **People who realised a positive impact on their livelihoods.**

Benefits	Quantitative information
<b>Human:</b> <ul style="list-style-type: none"> <li>- Knowledge &amp; skills (in production and management)</li> <li>- Improved health and nutrition (through milk consumption)</li> <li>- Education of children</li> <li>- Exposure tours/visits</li> </ul>	All participants?  <50% à 90% primary school 0% à 50% secondary school
<b>Social:</b> <ul style="list-style-type: none"> <li>- Community empowerment through groups</li> <li>- Increased farmers self-confidence</li> <li>- Empowerment of women</li> </ul>	
<b>Financial:</b> <ul style="list-style-type: none"> <li>- Improved income from:               <ul style="list-style-type: none"> <li>- sale of goats, milk, manure, fodder seeds, skins</li> <li>- Revenue from breeding services</li> <li>- Salaried employment of CAHWs and ear taggers</li> </ul> </li> </ul>	86% of group members sell 2 goats/year at KES 5,000/goat 50% of group members sell 6 litres of milk/week at KES 25/litre 156 buck keepers have an income from buck services
<b>Physical:</b> <ul style="list-style-type: none"> <li>- Improved housing (from mud grass thatched houses to iron-sheets and timber)</li> </ul>	90 CAHWs trained and working (1 per unit of 6 groups) >50% members with improved housing
<b>Natural:</b> <ul style="list-style-type: none"> <li>- Increased soil fertility through use of manure?</li> </ul>	Anecdotal evidence of huge increases in crop yields

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# Environmental Impact

## H. Environmental Impact

### 24. Direct and indirect environmental benefits related to the community based goat improvement model and its outcomes

#### Direct benefits

The direct environmental benefits of implementing the model include manure for increased crop production due to improved soil fertility. Goat manure is regarded as being superior to chemical fertilizers and being organic, it helps in replenishing soil with depleted nutrients as well as restoring soil texture. Furthermore, the model encourages and promotes growing fodder crops for goat feed. The goats are under confined management, fodders and forages are planted for them including indigenous trees which provide fodder for the goats and also fuel-wood for domestic use. By planting different plant species farmers are creating and maintaining environmental diversity within their communities. The goats are fed through cut and carry with the resultant manure being used to fertilize farms. With increased plant species, there is enough pollen to be used by bees for enhanced pollination of crops. Most groups have therefore maintained tree nurseries to ensure that seedlings are available. During the implementation of the goat model, FARM-Africa provided over one million seedlings to target farmers. This reduces the cutting of trees and preserved the environment for the benefit of posterity.

#### Indirect benefits

With improved environmental conservation, the general population will benefit from good quality air in the environment and a responsible society.

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### 25. Adverse impacts related to community based goat improvement model

If the farmers fail to plant enough trees and fodders, then the increase in consumption of forage feeds for animals could cause 'desertification'. There is the risk of loss of diversity for those plant species which are very much liked by the goats and therefore may be overused.

*[Word count 48]*

### 26. Increasing the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters

- Through the goat improvement model, farmers will be better enabled to manage their environment and have more understanding of the need to plant fodder trees for their livestock.
- During droughts it is easier to feed and manage goats than cattle.
- Farmers have also learnt how to improve their farm production through manure use. By growing fodder trees and using manure on crops makes a good balance and interaction within the mixed crop-livestock production systems.
- The emphasis on group approach also ensures that farmers are empowered to express their many concerns, have bargaining power, and gain access to improved market information and the information flows.

*[Word count 108]*

