

# The Kenya Dual Purpose Goat development project

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*J.M.K. Ojango, A.M. Okeyo and J.E.O. Rege (2010)*

*International Livestock Research Institute, Box 30709, Nairobi, Kenya*

## Background

The Kenya dual purpose goat (KDPG) breeding programme was started in 1980 to contribute to increased production of meat and milk and improve incomes in smallholder farming systems in Kenya. The project was part of a Small-Ruminant Collaborative Research Programme (SR-CRSP) operated under the auspices of the Ministry of Livestock Development (MLD) and funded by the United States Agency for International Development (USAID).

A study on livestock development for smallholder systems by Stotz<sup>1</sup> indicated that a dual purpose meat and milk goat was needed for the high potential areas where land sizes were too small to support dairy cows. Although early research demonstrated that the first cross between indigenous and exotic goats performed well, a structured cross-breeding programme that would deliver such a goat to farmers at that time was not available. It was thus decided that a composite breed would be developed and tested by the MLD under its scientific research division that could then be effectively selected for improvement.

The rationale for the choice of breeds to cross is presented by Cartwright<sup>2</sup>.

## Objectives of the project

The overall objective was to develop a synthetic goat breed that combined environmental adaptability of indigenous breeds (the [East African](#) and [Galla](#) goats), growth and milk producing abilities of two exotic dairy goat breeds ([Toggenburg](#) and [Anglo-Nubian](#)) for small holder farming systems in high potential areas of Western Kenya. The specific objectives were:

- To develop a goat with the genetic potential to reach 40kg mature doe weight, and produce 4kg of milk per day at peak lactation.

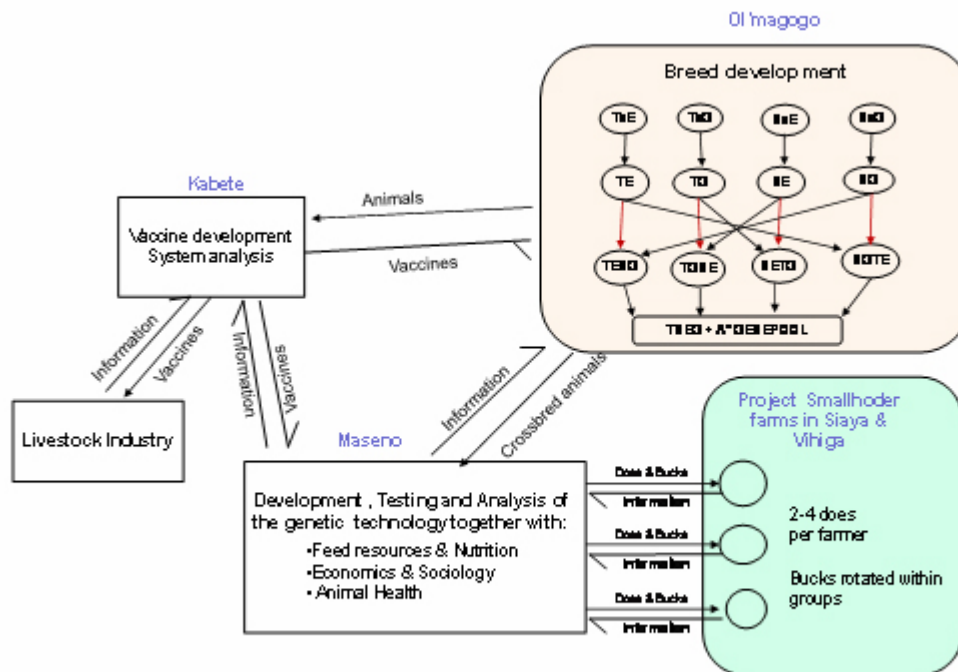
- To support smallholder farmers in target areas to obtain and retain flock sizes of six does for sustained milk supply throughout the year.

## The Approach

The KDPG was developed utilizing scientific principles for crossbreeding, selection and stabilization of the breed<sup>3, 4</sup>. The foundation parents included 450 indigenous does (250 Small East African (E) and 200 Galla (G)) purchased from various parts of the country, initially mated to different batches of [Toggenburg \(T\)](#) and Anglo-Nubian (N) bucks, and later inseminated using semen imported from bucks in the USA. A nucleus breed development programme was thus established as illustrated in Figure 1.

In developing and testing the breeding programme, a farming systems approach was applied involving an interdisciplinary team. The breed development was carried out at the OI-Magogo station in Naivasha, where parent stock and the various levels of crosses used in developing the KDPG were characterised and their productivity monitored (Figure 1). From this station, breeding animals were provided to the

station in Maseno that was in close proximity to targeted smallholder systems in Vihiga district of Western province, and Siaya and Kisumu districts of Nyanza province. At Maseno, research on feed resources, nutrition, and health aspects of the various crossbred animals and the KDPG was carried out.



**Figure 1.** Nucleus Breed development programme for the KDPG

Both on-farm and on-station testing of the animals was carried out through the identification of smallholder farmers to participate in the project using participatory rural appraisal techniques. Choice of farmers was from two contrasting cultural backgrounds, and two contrasting environments to enable comparative socio-economic studies within the project. From Maseno, each project farmer was provided with 2-4 breeding does depending on the number of animals they could support on their land. Breeding bucks were available to groups of farmers on a rotational basis. The animals belonged to the project, however, any products such as milk and manure, belonged to the farmers.

Performance of the animals was monitored through the project, resulting in a large number of publications on production, nutritional requirements, diseases, economic and socio-economic aspects of goat production in Kenya.<sup>5</sup>

## Outcomes and impact

1. A synthetic goat breed was developed-KDPG unique to Kenya that has proved to be able to survive and produce within restrictive conditions. The KDPG was able to produce between 1.5 and 3 liters of milk/doe/day for household consumption.
2. A breeding population of KDPG was established at Ol'Magogo, which expanded to 1800 animals by 1998, however, this population now stands at less than 400 animals (Bett, 2005).
3. On-Farm goat production manuals were developed for farmer adoption

4. Suitable feedstuffs and nutritional standards for the KDPG within the existing farming systems were identified and documented.
5. Methodologies for on-farm socio-economic evaluation of technologies to support the KDPG were developed
6. Knowledge and information on the production and management of goats was disseminated through training, workshops, conferences, publications and extension activities.
7. A large number of research scientists from Kenya were trained to MSc and PhD levels, however, due to poor remuneration from the government, and a failure by the system to recognise the capacity developed, many of these experts left government positions and obtained employment in other institutions and nations<sup>6</sup>.

Ten years after the inception of the project, there was a change in the organization of the MLD by the government, and in 1991 activities under the Scientific research division of the MLD were taken over by the new Kenya Agricultural Research Institution (KARI). Employees from the SR-CRSP project remained on the payroll for the MLD, yet were meant to be accountable to KARI, a situation which was untenable and led to the abandonment of the breeding stations previously under MLD. The breeding and farmer development programme for the KDPG thus came to an abrupt standstill.

Since 2005, within KARI, there has been renewed interest in the surviving flock of the KDPG, resulting in studies on the numbers and characteristics of the remaining population, and a re-evaluation of possible breeding strategies for the KDPG<sup>7,8</sup>

## **Lessons learnt**

1. The KDPG is a good synthetic breed that despite the abrupt termination of the initial project and the failure to support or continue with the breeding programme for more than ten years has "survived" with little inputs, and is now an animal on high demand-- though its population is < 400 animals.
2. Major policy issues that affected the integration of SR-CRSP activities into KARI included structural organization, staffing, management, resources and funding of field research activities. Questions on who would be involved in multiplication of the KDPG, how they would be delivered to the industry and at what cost were not adequately addressed.
3. Sub-optimal policies on development of small ruminants within the country hindered marketing of products other than meat from the KDPG. At the time of the project, the only milk permitted to be marketed in Kenya was milk from cows. Restrictions on livestock importation also hindered sourcing of germplasm for expanding the base population.
4. Livestock on-farm trials are long term and require sustained commitment and funding in order to develop, test, evaluate and disseminate results and outputs for impact on an industry.
5. The whole process of developing, testing, evaluating and disseminating an agricultural technology should not fall under the ambit of one institution. Close collaboration between research and extension from the onset would have improved dissemination of the technology developed. One

weakness of the SR-CRSP in Kenya was that input from extension was not integrated into the research programme<sup>6</sup>.

6. Provision of animals to farmers with no direct ownership by the farmers was not a good idea. When the source of the animal goes away at the end of the project, farmers tend to lose interest and may tend to dispose of the animals and move on to other endeavours.
7. Capacity strengthening from within the country was one of the greatest components of the SR-CRSP program.

## **Out-scaling opportunities**

Currently there is a great demand for a dairy goat that meets the needs of smallholder farmers. There are 'wait lists' for female dairy goats in several countries in East Africa - Kenya, Uganda, Rwanda - by individual farmers and development NGOs. The KDPG would be thriving. However, the abrupt termination of the program meant that 93ownership94 of the developed breed had not yet been achieved by the project. It is appreciated that the KDPG was a good animal-to build on work already carried out and riding on policy changes that have occurred in the livestock industry over time, an appropriate programme would need to be designed working in collaboration with all stakeholders, and ensuring that a key part of the 93ownership94 remains under the control of the main beneficiaries-the farmers. Government and NGO's should play supportive roles, while research and international institutions could help catalyze the development and implementation of the programmes.

Through all the improvement projects attempted within the country, there currently exists a population of Toggenburg crosses with indigenous goats. These could be exploited to develop, multiply and expand a population of dual purpose goats through a planned selection and breeding programme. Rigorous recording of performance and pedigree in the nucleus population developed would be required.

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