

Crops and Goat Project, Tanzania

Integrating dairy goats and root crop production for increasing food, nutrition and income security of smallholder farmers in Tanzania



Goal

To see farmers in Tanzania raise goats and grow crops that provide both fodder and food to improve nutrition and food security and incomes from agriculture.

Background

Domestic livestock are an important component of the agricultural sector in Tanzania, with goats ranking second to cattle in terms of the contribution of livestock to income and human nutrition. Yet low growth rates of livestock and low milk production among small-scale farmers limit food and nutritional benefits. To address this problem, this project seeks to improve food security and human nutrition through an integrated program of dairy goat cross-breeding and goat milk production that is coupled with cassava and sweet potato production for food and feed.

Approach

The project promotes dairy goat production using crossbred goats and zero-grazing system as a management practice. This system, while demanding in terms of labour, has proven very successful in the control of diseases, management of breeding and integrating goat rearing into the whole farm including protection of natural resources. The project promotes formation of community-based breeding associations that builds up the numbers of exotic breeds.

Project objectives

- To improve the milk production potential of indigenous goats through crossbreeding, improved management and control of major diseases.
- To test and evaluate improved sweet potato and cassava varieties that have the dual purpose of improving food security and nutrition at household level and the development of locally available and cost effective rations for dairy goats.
- To investigate the livelihood strategies, production potential and marketing possibilities of local goats and crops in the study areas.
- To analyze the impacts (productivity, environmental, gender and empowerment, food security and nutrition) of integrating improved goat breeds with sweet potatoes and cassava into an agro-pastoral farming system.

Expected outcome

The expected outcome for the project as a whole is to enhance food security in the Dodoma and Morogoro regions of Tanzania through the participatory development of dairy goat and root crop systems. Very poor households and female-headed households are expected to benefit from this project through careful design of project components (i.e. farmer groups), research instruments and development strategies. This expected outcome will be achieved through a series of individual study areas, each of which contains a set of outputs, outcomes and indicators.

Development objectives

- Increased local availability of cross-bred goats and goat milk production (output per goat) due to better breeds, better health and reduced disease
- Improved participation of local associations in goat breeding and milking, and increased access to, and use of, methods to reduce diseases in goats
- Improved varieties, productivity and processing of cassava and sweet potato crops
- Increased household food and nutritional security through the consumption of locally produced goat milk, sweet potato and cassava
- Improved marketing systems for goats and root crops for men and women, and ability of women to independently participate in various stages of the value chains
- Collective and participatory enforcement of more effective land utilization methods by community members

The University of Alberta based in Canada and Sokoine University of Agriculture (SUA) in Morogoro, Tanzania lead the project. The project which is housed by SUA has several components led by different collaborating institutions. SUA leads the goat component while the agricultural institute in Kibaha leads the farmer participatory trials for improved cassava and sweet potatoes. Partners such as the foundation for sustainable rural development (SURUDE), Kongwa and Mvomero district councils play a key role in the operationalization of the project. The environmental impact assessment and the marketing components are led by SUA. The International Livestock Research Institute (ILRI) leads the gender analysis and integration and monitoring and evaluation components but ILRI also contributes to the food security and nutritional assessments which is led by SUA and the livelihood component led by the University of Alberta.

The goat component

Among the livestock species kept in Tanzania, goats rank second to cattle in terms of contribution to income and human nutrition, particularly animal protein. Worldwide, goats and other small ruminants are among the most popular and beneficial livestock for those with very limited resources. This is due to low initial costs for goats' enterprise and ease of managing the stock. Due to small size of the goat milk fat globules, goat milk is easily digested even by lactose intolerant persons, children and people affected by HIV/AIDS. Furthermore, goat milk is a valuable source of protein, fat, calcium, iron, phosphorus, magnesium and vitamins, particularly vitamin A.

Cassava and sweet potatoes for improved dairy goat production and household nutrition

Traditionally, cassava and sweet potatoes are grown exclusively for the purpose of tuber production, mainly for human consumption, and the leaves and vines are considered as a waste material after harvest. Thus, alternative use of the cas-



sava leaves and potato vines as a feed for animals is appealing. The project works with small-scale farmers to introduce and study the technology of cassava leaf meal and sweet potato vines as protein supplements to replace conventional oil cake supplements for dairy goats. The aim is to enable the small-scale farmers to formulate better quality rations for dairy goats at an affordable cost by using locally available feed ingredients.

Gender analysis and integration

Gender analysis and integration is an integral component of the project with attention to the gendered aspects of food security improvements, household level impacts, market access and other aspects. ILRI supports this component by providing the ex ante gender analysis and other gender studies'. During the baseline analysis, the gender analysis identifies gendered constraints and opportunities for dairy goat production and marketing, the current livestock ownership patterns, division of labour and decision making. In the household modelling, the data are used to examine the likely impacts of the introduction of dairy goats and improved cassava and sweet potato varieties on gendered variables such as labour and decision-making.

Food security and nutrition assessments

Impacts of the interventions on food security and nutrition are measured through food security profiling of households where all households in the project sites and the comparison households in similar selected sites are carried out at the start, mid-way and at the end of the project.

Different measures of food security related to availability, access and utilization are used, combining several indicators such as the household dietary diversity score which is a measure of access to different food groups. Months of inadequate food provisioning over a 12-month period are combined with the number of months harvest lasts for basic commodities to measure availability from own production as well as availability from market purchases.

Data on food availability calendars are collected through focus group discussions to give a broader picture of food availability at village level. We also focus on child nutrition using anthropometric measurements of children under five years of age. The two key measures are the weight for age, which identifies the condition of being underweight for a specific age, and the weight for height.

Environmental impact assessment

Environmental sustainability is a key challenge in the project study areas and there is a potential to contribute to a positive outcome through the project. An environmental impact assessment (EIA) is being used to study potential environmental impacts. This component is led by SUA with contributions by the University of Alberta. The project is using a participatory approach to mitigate environmental effects emanating from the project. Working closely with the local environment committee in each village the project is engaging in participatory environmental assessment techniques which are utilized with farmers to capture a greater understanding of anticipated positive and negative impacts from project implementation. It is working closely with this committee, to develop participatory tools for environmental assessment in terms of impacts on water and soil within the farms of project participants, and develop strategies for best practice through discussions with local farmer groups, farmer field days, and farmer-to-farmer exchange visits.

Understanding and improving market access

This component, which is led by SUA and assesses whether current market access adversely impacts the ability of small holders to successfully transition to a new system of production and livelihoods. The focus is on how the challenges of market access and the resultant outcomes are different for men and women. The project seeks to provide a solid understanding of current livelihoods and how they are impacted on by the market. Through a baseline market study, the project is documenting current market access conditions of households

in the study area including information about physical attributes of the market, distance and time taken to travel to the nearest major road, and the village centre, characterization to quantify the transaction costs associated with traveling the distances and other impediments to market access which might be caused by household idiosyncrasies. A particular focus of this study will be on how gender affects the linkages between market access and livelihoods. In addition, other studies such as the value chain analysis are being conducted.



Livelihoods

At the outset of the project, a baseline survey was conducted to collect information on the current livelihood conditions and food security status of selected households in the areas where the dairy goats and improved root crop varieties were introduced. The overall goal of the livelihood component is to better understand current livelihoods in order to identify opportunities and constraints for the introduction of the new agricultural activities.

Monitoring and evaluation framework

The international Livestock Research Institute (ILRI) supports this component by facilitating monitoring and learning from the project through a dual monitoring and evaluation system. This dual system includes the project and community monitoring and evaluation systems to ensure functioning feedback systems and democratic decision-making about the project activities by communities.

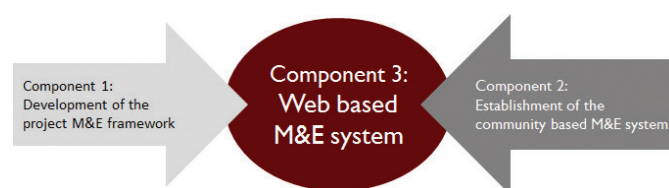


Figure 1: Operationalization of the monitoring and evaluation system.

The project implements a dual monitoring and evaluation system with a project monitoring and evaluation and a community democratic monitoring and evaluation system. This is to ensure that the communities participating in the project and the project team have feedback mechanisms and that the community articulates their aspirations and expected results from the project and keeps the project team accountable for delivery.

Location

Kongwa and Mvomero districts

Project duration

March 2011 to August 2014

Lead institutions

- Sokoine University of Agriculture
- University of Alberta

Collaborating institutions

- Agricultural Research Institute, Kibaha
- Foundation for Sustainable Rural Development
- Kongwa District Council
- Mvomero District Council
- International Livestock Research Institute

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For more information, visit the project website
<https://sites.google.com/a/ualberta.ca/diary-goats-and-root-crops-tanzania/home>



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