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Dairy cattle for poverty alleviation in Southern Tanzania

Wolfgang Bayer¹ and Lucas Basilio Kapunda²

¹ Consultant, Rohnsweg 56, 37085 Göttingen, Germany, wb_bayer@web.de

² Coordinator, Southern Highland Network, Mbeya, Tanzania

Abstract

In the past half-century, various ways of increasing dairy production have been tried in Tanzania, the “Heifer in Trust” (HIT) scheme being the most successful. A group of farmers receives a small number of exotic dairy heifers (mostly Holstein-Friesian crosses) and distributes the animals to individual households belonging to the group. Farmers are obliged to keep the cows indoors, are advised to compost manure, and have to repay two heifers per heifer received: one to the farmer group to be passed on to another group member and one to the project to cover expenses. A recent study in the southern highlands of Tanzania examined the effectiveness of this approach in alleviating poverty.

In the highlands, high-grade dairy animals can produce 5000 l of milk/lactation if they receive adequate amounts of concentrated feed. At lower elevations with higher disease pressure, lower-grade animals fare better. Income from milk sales helped some smallholder families acquire additional land, improve their houses (and cattle sheds), finance small-scale businesses, send their children to secondary school, and expand the dairy business. Manure helped double the maize yield and improve yields of cash crops. Keeping improved dairy cattle stimulated farmers to dig shallow wells. Partnership between spouses has reportedly improved through the loan agreement. Families that barely managed to survive six years ago are now considered wealthy.

However, only 2–6% of households in any village are reached by the HIT scheme and its success depends on good functioning of the farmer groups. In some groups, the number of households keeping improved dairy cattle increased from 5 to 25 within six years whereas in others the number stagnated or the group dissolved. It was also found that the project has reached primarily the moderately poor and able-bodied people and that dairy production is more successful in peri-urban than in more remote rural areas.

1 Introduction

Despite a cattle population of about 12 million head, Tanzania is not self-sufficient in milk and milk products. Various schemes to improve milk production have been tried during the past half-century. According to Kuriwijila (2002), these include:

- Selection among the local East African Zebu Cattle. This was tried in the 1930s, but the milk yield did not exceed 1000 litres per lactation. Cross-breeding with European dairy cattle doubled the milk yield, but requires better-quality feed and lowers the resistance against tropical disease. It therefore did not take off on a broad scale;
- Development of a synthetic breed at Mpwapwa Research Station. Indigenous cattle were crossed with dairy breeds of Indian and European origin over a period of 20 years. In 1956 the experimental herd was closed for selection. The breed has good disease resistance and a milk yield comparable to that of crossbreds of indigenous cattle with European dairy breeds, but was never used much beyond research stations. FAO now classifies it as endangered.

- Importation of several thousand dairy cattle from New Zealand, USA, Kenya and Zimbabwe, initially to stock large farms and then to distribute surplus animals to smallholder farmers. This approach failed in the 1970s and 1980s;
- Dairy villages during the *Ujamaa* (villagisation) movement and village bull centres. None of the dairy villages ever prospered, and the bull centres failed because of poor management;
- The Heifer in Trust (HIT) scheme pioneered by Heifer Project International (HPI) in collaboration with the Lutheran Church in northern Tanzania. Under this scheme, farmers are given training and have to undergo a capability assessment. They are expected to keep the cattle in a shed with a concrete floor, compost manure in a roofed pit, and grow fodder. Farmers receive a pregnant dairy heifer (cross of local breed with European dairy breed such as Holstein Friesian or Ayrshire) and have to repay two offspring: one heifer that is passed on to another farmer and another animal (preferably female) to be passed back to the project to cover expenses. This approach made a breakthrough when farmers were allowed to pass-on and pass-back not pregnant heifers but rather calves after weaning (at 6 months of age).

The HIT approach is used not only by HPI but was also by the Swiss-supported Southern Highlands Dairy Development (SHDD) Project and is the backbone of the dairy cattle component of the Misereor-supported Southern Highland Network on sustainable agriculture (SA), which covers seven Catholic dioceses in southern Tanzania. Because there were some doubts, among donors and project implementation agencies as to whether the HIT approach actually alleviates poverty, a study was initiated to examine the impact of HIT on farming households in the region.

2 Methodology

The study was undertaken by means of:

- Reviewing project reports and other secondary sources of information
- Visits to ten farming villages that took part in the scheme in three dioceses, during which the project coordinator and an external consultant engaged in intensive discussions with groups of dairy farmers and visited the farms of some group members
- A questionnaire survey in the six dioceses where the SA programme includes a dairy cattle component. The sample included 102 farming households in 23 villages. The survey covered management practices and the costs and benefits of livestock-keeping, encompassing not only dairy cattle but also other animal species kept by the farmers
- A workshop with technical staff of the SA programme and Caritas directors (decision-makers of the donor organisation).

3 Results

The name “Southern Highland Network” is somewhat misleading, since it covers project activities in areas that range from less than 300 m to more than 2000 m above sea level.

3.1 Positive impact on dairy cattle on households.

The costs of fodder and feedstuffs and the prices for milk are presently such that it is economical to feed dairy cows up to their genetic potential. At higher elevations (1700–2000 masl), cows with a high percentage of European dairy cattle blood can be kept, and top cows can produce 5000 l per lactation or more. At lower elevations, cattle with a lower percentage of European blood fare better. The milk yield of crossbreeds is lower, but 2000–2500 l per lactation can still be reached if the cows are fed adequately and treated regularly against ticks. Overall, the average yield of improved dairy cows throughout the programme area in the southern highlands is in the order of 2500–3000 l per lactation.

The impact of the improved milk production on households can be spectacular. Families that barely managed to survive six years ago are now considered wealthy. After 3–4 years, some farmers saved enough to improve their houses, to increase their land area under crops, and to send their children to secondary school (some farmers even send their children now to more expensive private schools). Some farmers dug wells to ease the work of obtaining water mainly for the cattle but also for other animals and people. Neighbours may also use these wells. Some farmers expanded the dairy enterprise by buying additional cows, e.g. from mission farms. There were also reports that the relationship between husbands and wives improved, as the men spend more time working in agriculture and less time drinking beer. Many dairy farmers are women, and many dairy groups are chaired by a woman. Thus, promotion of dairy cattle has strengthened the economic and socio-political role of women in the communities. Richer dairy farmers started employing workers for the labour-intensive dairy business. Although the work is not well paid, it does offer some income-earning opportunities for poorer people.

The application of manure increased the amount of maize harvested by the dairy households from 5 bags to 10 bags, on average. Furthermore, expenditures for fertiliser (which had to be made when the households had little or no manure, because the soil fertility in most parts of southern Tanzania is low) was halved on average across the sample. Using manure as fertiliser also increased the yields of cash crops such as tomatoes and bananas (Bayer & Kapunda 2006). However, the number of dairy cattle kept by most smallholders is too small to allow them to manure all their cropland (Jackson & Mtengeti 2005).

These findings are in line with reports on other dairy project in southern Tanzania (Weperen *et al* 2003).

3.2 Problems and limitations

Thus far, the programme has reached only a small minority of farmers, even in the wards where the programme focuses its work. Only 2–6% of households in any village are reached by the HIT scheme. In none of the villages did more than 10% of the households benefit from it, and the overall average was 2.4% of the more than 50,000 household in the wards where the programme works. In the three dioceses for which data were available, the programme had worked in the villages for somewhat more than five years on average. During this period, the number of households that keep improved dairy cattle increased by 67% (from 744 to 1247 households) and the total number of dairy cattle kept more than doubled. Project managers regard this progress as slow.

Because access to land and fodder is usually not a limiting factor, able-bodied poor people can easily enter into the dairy business. However, dairying is tiring work that cannot be done by sick or disabled people. Therefore, such very needy people cannot benefit from such a dairy project.

A key factor for success appears to be the functioning of the dairy farmer groups. Some groups could increase their membership fivefold within 6 years, and increase the number of dairy cattle kept by a factor of ten, whereas other groups stagnated or lost members and animals. Some groups do not offer a bull service nor do they offer professional advice. Some “para-vets” (community-based animal health workers) ceased to work because the promised payment was not forthcoming. The para-vets need to be better organised and better trained, and need to be recompensed for their services.

A second factor that influences the success of the dairy programme is the distance to markets in major towns. Dairy farmers living close to towns can expand their dairy holdings and a larger number of farmers can enter into the dairy business, whereas in more remote rural villages a few extra dairy cows can cause the local milk market to collapse because of the limited number of customers. On average among the farmers surveyed, milk marketing (including travel and transaction time) takes an average of two hours per day – ranging from 30 minutes to 4 hours depending on the distance from town. Where roads are not good and are not highly frequented by motorised vehicles, milk producers within 1–1.5 hours’ cycling distance from towns can be regarded as “peri-urban”. Those living in more distant rural areas find it too time-consuming to sell milk in town. In most cases, the milk is being marketed on an individual basis, with the exception of a few villages around one town where there is a dairy factory that collects milk each morning. In most towns, the producers do not have established milk-selling points.

4 Conclusions

Smallholder households that received heifers in trust and now own improved dairy cows have gained substantial benefits from milk production and marketing. Milk marketing could be improved if the producers would form marketing groups that sell, e.g., at fixed selling points in towns. Although milk marketing in towns is currently not a problem, demand for milk will ultimately reach a limit which will make sales less lucrative. Many dairy groups need support in organisational development so that they are better able to provide services to their members. Particularly the training and organisation of para-vets need improvement.

Only a small percentage of farmers in any one village can become dairy farmers. This is also true for specialisation in any other single type of livestock production or related income-generating activity. Nevertheless, if the SA programme would broaden its livestock portfolio beyond dairy cattle, it could reach more (poor) people. Promising options appear to be: promotion of extensive and intensive poultry keeping, pig keeping, aquaculture, beekeeping and the promotion of rural transport services, e.g. with donkeys. As the variety of technical issues that will arise when working with a wider range of animal species and husbandry systems can hardly be addressed by the small number of programme staff, close collaboration with agencies, organisations and projects with the necessary experience in the respective fields should be

sought.

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