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Capacity building of smallholder dairy farmers in Kenya through extension services and market linkages

The dairy sector in Kenya accounts for 4 per cent of the country's gross domestic product and is one of the largest and most developed in Sub-Saharan Africa. More than 1 million smallholder farmers in Kenya depend on dairy farming for their livelihoods, and they account for more than 80 per cent of milk and beef production. However, dairy farmers face several barriers to increased profitability, including animal diseases, lack of high-quality feed, lack of veterinary and artificial insemination services and limited access to markets. Many researchers, NGOs, governments and donors share the view that smallholder dairy farming can be a particularly effective mechanism for alleviating poverty and increasing food security in regions well-suited for dairy production, such as in western Kenya.

To tap into this potential, the Kenyan government, in partnership with the International Fund for Agricultural Development, implemented the Smallholder Dairy Commercialization Programme (SDCP) from 2005 to 2015. After SDCP concluded, researchers from Lead Analytics and the American Institutes for Research conducted a quasi-experimental, mixed-methods evaluation to determine its effects on farmers' production, income and food security, and on the empowerment of female dairy farmers.

Highlights

- Farmers experienced increased food security as a result of increased income through SDCP.
- SDCP had positive effects on the welfare of female dairy farmers, increasing their intra-household bargaining power in the production and sale of dairy products.
- SDCP farmers were more likely to adopt recommended practices, such as having concrete floors, and to avail themselves of recommended services, such as parasite control for cattle.
- However, the programme had limited effects on the quantity of milk sold or prices obtained amongst SDCP participants.



Intervention

SDCP aimed to reach 600 dairy groups comprising 24,000 smallholder farmers in 9 counties. The programme sought to increase smallholders' dairy incomes by increasing the quantity of milk produced, decreasing farmers' production and marketing costs and increasing the prices farmers

received. Through SDCP, farmers observed demonstrations and received training in improved dairy production techniques, and in small business management and accounting. The programme also included improved road infrastructure and provided farmers with easier access to grants for activities such as

forage production and feed milling. The programme primarily targeted resource-poor smallholder dairy farmers, particularly women. Many female-headed households in the district own dairy cows, but women have traditionally had less access to extension services and leadership roles in dairy farmers' groups.

Main findings

SDCP's extension services and training for dairy groups had a positive impact. The programme led to improved animal management, along with improved group performance. The evaluation found positive effects of the programme on the number of cows owned and the number of cows currently producing milk. In addition, findings indicated that SDCP farmers were 8 percentage points more likely to report having sold milk the previous day, although there was no significant effect overall on the quantity of milk sold. Programme recipients also obtained higher prices for their milk, although this result was only marginally significant. Qualitative data supported the quantitative findings, with farmers reporting in focus group discussions that they were experiencing higher incomes as a result of the programme.

Animal management practices: Results suggested that SDCP increased the number of farmers employing some animal health services, though not others. Although there were no significant effects on the use of anthelmintic drugs or tick control services, SDCP farmers were more likely to have used vaccination services (68 per cent in the treatment group versus 43 per cent in the control group) and curative treatment services (28 per cent versus 21 per cent).

One notable finding was that SDCP appeared to make a difference in which household members made decisions on the use of these services. One goal of SDCP was to increase the percentage of households in which women were the primary decision makers for dairy production, which tends to be well below 50 per cent in

programme areas. The programme had some success in achieving this goal. For instance, women made the decision whether to use anthelmintic drugs in 45 per cent of treatment households, compared to 17 per cent of comparison households. For decisions about the use of a vaccination service, the rates were 40 per cent in treatment households and 21 per cent in comparison households.

Milk production: Participating SDCP households experienced greater milk production than control households. Measurement of intermediate outcomes suggested that this effect was primarily due to improved input and management practices, including better access to information about best practices, use of techniques such as cross-breeding and artificial insemination, and better access to health

services. SDCP also succeeded in smoothing milk production across the year by improving year-round access to adequate fodder and enhancing farmers' knowledge of fodder management.

Milk and input markets: Although SDCP led to improvements in milk production and milk sales, the evidence suggested the impact on milk sold was lower than on production. This could be partially attributed to the fact that there was much wider dissemination of knowledge on production-related and farm management topics, as compared to marketing topics. Nonetheless, the impact on total value of milk sold was significantly positive: treatment households experienced 43 per cent greater total value, on average. The findings further suggest that when it was available, access to credit was particularly helpful in enabling farmers to access input and output markets. SDCP dairy groups

accessed a wider range of financing sources than comparison groups, with local savings and loan clubs proving particularly popular among SDCP dairy groups.

Food security: Most focus group participants shared the view that SDCP helped them attain better food security and thus had a positive effect on overall health in their families. One of the catalysts for this improvement was increased knowledge of crop growing practices, including using cow dung for harvesting. Household surveys revealed that SDCP households enjoyed a more diverse food basket, with greater consumption of high-protein foods and less reliance on tubers and fruits.

Differential effects on women: The SDCP targeting strategy prioritised resource-poor farmers, including women. As a result, female-headed households were 11 percentage points more likely to participate in the programme than male-headed households. Finally, women managed

the money from milk sales in 30 per cent of treatment households, compared to 21 per cent in control households, although the study measured only money management, rather than decisions about how money was used. Taken together, the qualitative and quantitative findings indicate that SDCP positively affected the welfare of female dairy farmers by increasing their decision-making power with respect to household dairy production.

Cost-effectiveness: The evaluators estimated that SDCP participants saw milk production gains with a value of KES20,586 (USD200) on average. Given the average cost per participant of KES97,561 (USD949), this implies that the programme would break even in approximately five years. However, this estimate is tailored to the particular costs and benefits of SDCP; programmes implemented in other contexts could have significantly different levels of cost-effectiveness.

Lessons for future research and programming

Overall, the results of the evaluation suggest that under the right conditions, programmes like SDCP can improve production, food security and women's empowerment among smallholder dairy farmers. In particular, the authors suggest that the findings are most likely to

generalise to other areas of Kenya and eastern Africa, where climatic and geographical conditions are similar and where dairy farmers face similar challenges. It is much less certain whether SDCP's results would extend to other regions or other cash-crop markets.

The evaluators also identified several challenges faced by SDCP, which shed light on the steps implementing agencies can take to promote the success of programmes to benefit smallholder farmers:



- Training on improved practices must be complemented with adequate resources to ensure farmers' access to recommended services. In SDCP, farmers reported they were often not able to implement the practices they had learned through training, partly because government agencies providing technical services were understaffed and underfunded. Key informants interviewed by the evaluators also reported that despite dairy groups' greater access to credit under SDCP, many individual farmers still faced capital constraints that could prevent them from implementing recommended practices.
- As much as possible, programmes should seek to establish formal arrangements with banks, livestock service providers and buyers. These arrangements were often lacking in the case of SDCP, but could have increased farmers' bargaining power and the reliability of their access to key services along the value chain.
- Timely implementation of programme activities depends crucially on efficient disbursement of programme funds. Lower-level government officials responsible for SDCP activities sometimes lacked the resources or authority to ensure that funds to pay service providers were available when they were needed. Implementers should therefore establish processes and guidelines to prevent bottlenecks and delays in fund disbursements.



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About this impact evaluation

This brief is based on an impact evaluation report published in 2018, *Impact evaluation of the Smallholder Dairy Commercialization Programme in Kenya*, by Juan Bonilla, Nancy McCarthy, Simon Mugatha, Nisha Rai, Andrea Coombes and Joshua Brubaker.

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