NURU KENYA

2022 DAIRY REPORT

NURU KENYA 2022 DAIRY REPORT

Thomas Boswell and Heath Prince (Ray Marshall Center)

Fatuma Nyanjong (Nuru Kenya)

Casey Harrison, Matt Lineal, and Ian Schwenke (Nuru International)

This report is commissioned by Nuru International

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

In 2008, Nuru Kenya (NK) set out to provide meaningful choices that empower communities to lift themselves out of poverty in a sustainable way. The integrated Nuru model seeks to address three key areas of need: 1) food insecurity, 2) inability to cope with economic shocks and 3) unnecessary disease and death. From inception, NK developed agriculture, financial inclusion and healthcare programs as solutions for these areas of need by using a co-creative program planning process.

Programs have evolved over the years, and NK has been involved in an increasing number of programs and activities. This report reviews NK's 2022 impact in the dairy sector, which represents a large portion of their overall programs across two counties, with data in Migori County stretching back to 2017, and new data becoming available this year in Homa Bay County, Kenya. To track impact in the dairy sector, the NK and Nuru International Monitoring, Evaluation and Learning teams collect and analyze data across programs using select survey and analysis methods. Since 2016, Nuru International has partnered with the Ray Marshall Center, an applied research and policy institute, to better understand program outcomes and impacts.

Within the Dairy Program, NK aims to increase milk yields and incomes for farmers, alongside the promotion of a suite of best practices for farmers to follow in order to ensure the best health and production of their animals, as well as provide training on fodder production, and artificial insemination to eligible farmers. Participant households are all members of farmer cooperatives, through which they receive services. Dairy inputs are disbursed on loan and coupled with training and extension services. As members of cooperatives, households repay their loans and increase on-farm income. This enables them to better cope with economic shocks. The cooperatives redistribute loan repayments as a revolving fund that members can access to support local economic growth.

Throughout Kenya, 2022 was a turbulent year. The COVID-19 pandemic continued to disrupt the economy, general elections in August 2022 led to months of economic stagnation due to fears of violence, and prices spiked to historic levels due to global inflation as well as the conflict in Ukraine which saw skyrocketing prices for key farm inputs and fuel for transportation. Despite these events, Nuru Kenya still had a very successful year in the dairy sector. Key findings of this Nuru Kenya 2022 Dairy Report include the following highlights:

- Nuru dairy farmers increased milk yields by 79% over the 2017 baseline, to an average of 3.22 liters per cow per day in Migori County.

- Net profit from dairy activities in 2022 was on average $237 per farmer in Migori County, an income increase of 180% over baseline in 2017.

- 89% of farmers in Migori County are now using best management practices, an increase from 55% of farmers adopting best practices in 2020. Nuru qualifies adoption as farmers adopting at least three of four critical dairy best management practices.

- In Homa Bay, Nuru Kenya was able to gauge initial baseline impact from program expansion, seeing farmers with an average annual net profit of $429, and an average yield of 5.83 liters per cow per day.

RURAL LIVELIHOODS

INTRODUCTION

The Nuru Kenya Dairy Program aims to track farmers acquisition of a key set of best practices, and their continued usage over the years, while also offering artificial insemination services to improve animal productivity and health. This is directly tied to increase in dairy yields, as the utilization of best practices increases the farmers' capacity to produce more liters of milk per farmer per day. The aims of this program long-term are to promote improved animal breeding, increase yields of milk, increase income, promote practices that foster long term sustainable livelihoods, and equip farmers to better cope with external shocks and stressors which ensure farmers can persevere in crisis situations.

Within the Dairy Program over a single season, farmers receive technical assistance from NK extension and veterinary agents, and trainings at the cooperative level, to ensure best practice adoption across a number of improved animal management practices, including fodder production and processing, cow vaccination and spraying, and access to artificial insemination services among others. Moreover, cooperatives manage improved cold chain technology like solar powered milk coolers to help manage for quality and limit wastage. Dairy farmers aggregate milk production at the cooperative level in order to fulfil sales contracts with local and regional buyers.

Objective

This report summarizes the 2022 dairy activities at NK. The following data represents both a continuation of data collection in Migori County, seen in previous reports, as well as the addition of data from Homa Bay County, a new location for NK activities. The data from Migori stands as the 5th year of data collection for Nuru-supported dairy farmers since the baseline in 2017. These assessments aim to answer the question: *What is the impact of the NK Dairy Program this year? Further, have there been sustained progress and results?*

Table 1. Dairy Survey Timeline and Sample Sizes

Study Group (county)	Sample size: Dairy	# of Enumerators	Data collection Dates
Migori	456		
Homa Bay	131	26	**October 12th-18th, 2022**

Monitoring

In addition to yearly impact evaluations, the NK M&E team collects monitoring data throughout the year (Table 2). While evaluations focus on a sample of farmers, program teams monitor the entire Nuru farmer population. The monitoring data provides the NK team with quarterly data for real-time, data-driven decision making.

Table 2. NK 2022 Rural Livelihoods Monitoring Results

Indicator	Performance[1]	Target	Actual
Number of Nuru farmers (active cooperative members)		3,500	2,886[2]
Number of farmers cooperatives enrolled in Dairy Program		12	16

METHODOLOGY

The 2022 data analyzed in this report was collected from October, 2022. In order to conduct the survey, the NK MEL team hires and trains a group of local enumerators, many of which have been with Nuru Kenya intermittently over many years. This years' data was collected using the KoboToolBox survey tool. Questions were tailored in order to capture data on the following impact indicators:

- Dairy yield (cows per farmer, liters per cow, number of cows milking)
- Best practices (artificial insemination, cow spraying, deworming, and vaccination)
- Fodder production practices

---

[1] The indicator is considered fulfilled if it achieves 75% of the target.

[2] This target and actual include farmers in all 3 intervention counties, including Baringo. Homa Bay and Migori counties alone have a total of 2,349 registered farmers.

Dairy Yield[3]

The NK Dairy Program aims to diversify the livelihoods of Nuru farmers beyond crop agriculture, improve the production potential of dairy animals, and develop sustainable market and production systems for milk in Kenya, while providing farmers technical knowledge on best practices, and services like artificial insemination for those eligible. In 2022, the Dairy Program expanded its reach to 16 cooperatives across two counties. Homa Bay County traditionally has larger, long-standing and more developed dairy cooperatives, and therefore was expected to sustain higher levels of milk production than existing cooperatives in Migori County. The Migori County milk yield in 2022 was found to be 3.22 liters per cow per day for NK-supported farmers, a significant increase of 79% over the 2017 baseline, and 20% over the previous recorded value in 2020. This represents, furthermore, the 5th consecutive year where milk yields have increased for Nuru farmers in Migori County.

In Homa Bay, where more developed dairy cooperatives are present, the yield value for Nuru farmers was found to be 5.83 liters per cow per day on average. As this is the first iteration of dairy data collection in Homa Bay, there is not a comparison to previous yields, although there is planned follow up data collection for 2023. As such, this survey in Homa Bay represents a baseline to which NK can compare future yields seen in Homa Bay's Nuru-supported cooperatives.

These results are very significant for Nuru farmers, showing that there is a significant increase in the availability of milk at the household level, both for consumption and sale. This provides nutrition to families that previously may not have had this protein staple, and also provides enhanced income-generation for Nuru households.
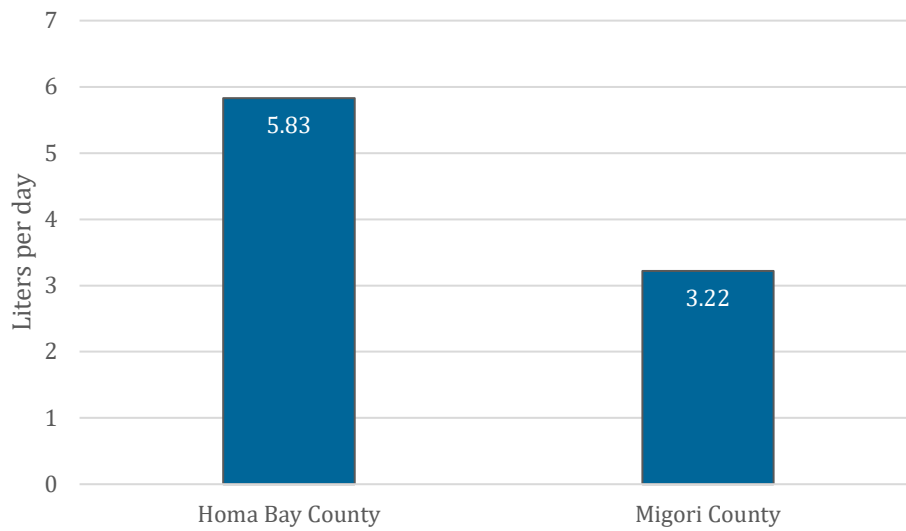
---

[3] Dairy yield data from 2017 through 2018 was analyzed by Nuru and shared with RMC.

Figure 1. Average Milk Yield per Cow per Day, 2017-2022 (Migori)
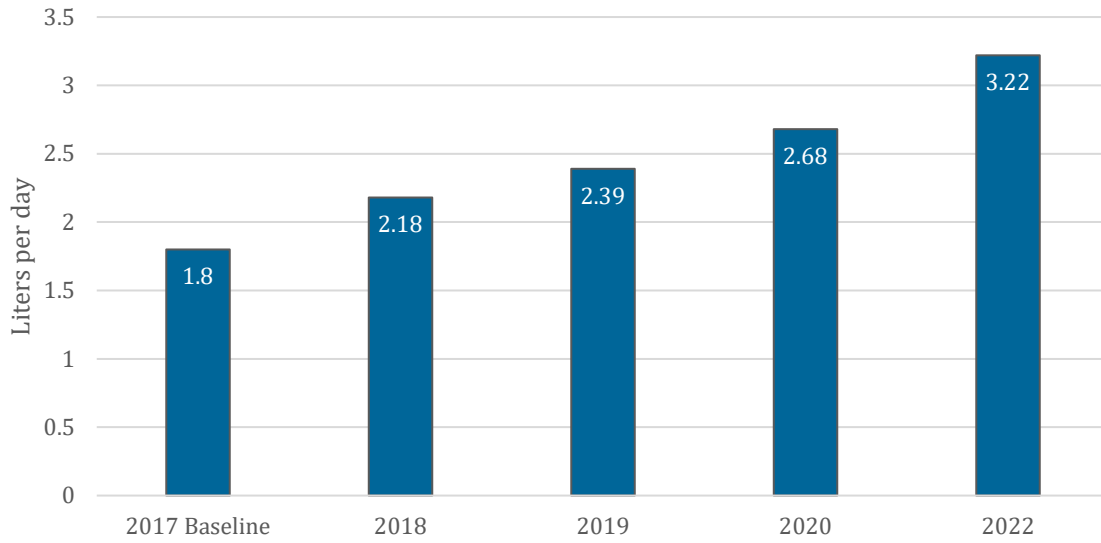
**Figure 2. Milk Yield per Cow per Day by County, 2022**

Dairy Best Management Practices (BMP)[4]

This year, NK has tracked 4 Best Management Practices (BMPs) as well as the number of farmers that vaccinate their cows against various diseases. These 4 practices have all been tracked since the initial baseline measurement of dairy practices used in 2018, and have all seen an increase over the years of farmers that adopt at least 50%, 75%, or 100% of these practices (Figure 3).

The adoption of improved management practices in livestock production is a behavior change metric. BMPs are one of the three key components of measuring sustainable productivity. Yield improvements and income generation are the other two components. Assisting communities on their journey through the stages of change takes time. It can be met with environmental and social barriers to change, and traumatic shocks like pandemics, global economic crises, and local political unrest. Other barriers include extreme weather events, pests and diseases, and even entrenched social constructs (e.g. risk aversion to artificial insemination and gender biases). However, as farmers begin to see the gradual benefits of improved genetics and animal health practices in the form of yield increases and higher income returns, the rate of adoption will increase.

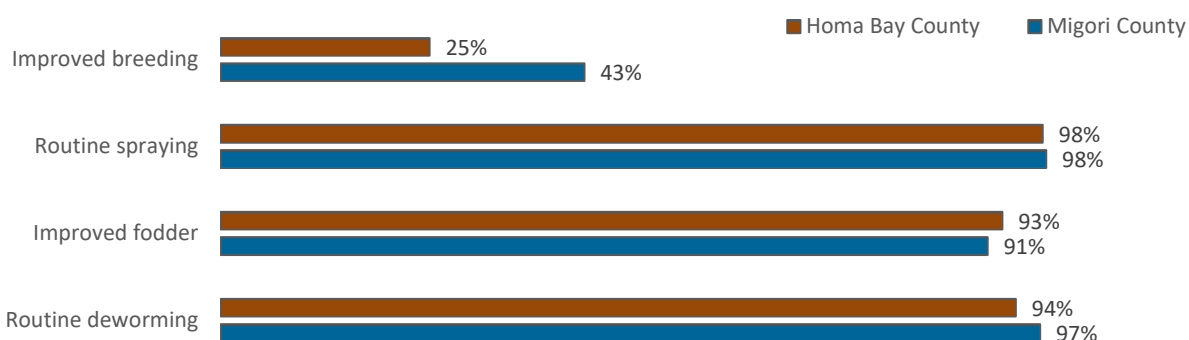**Figure 3. Proportion of Farmers by Number of BMPs Currently Practicing, Baseline-2022 (Migori)**

---
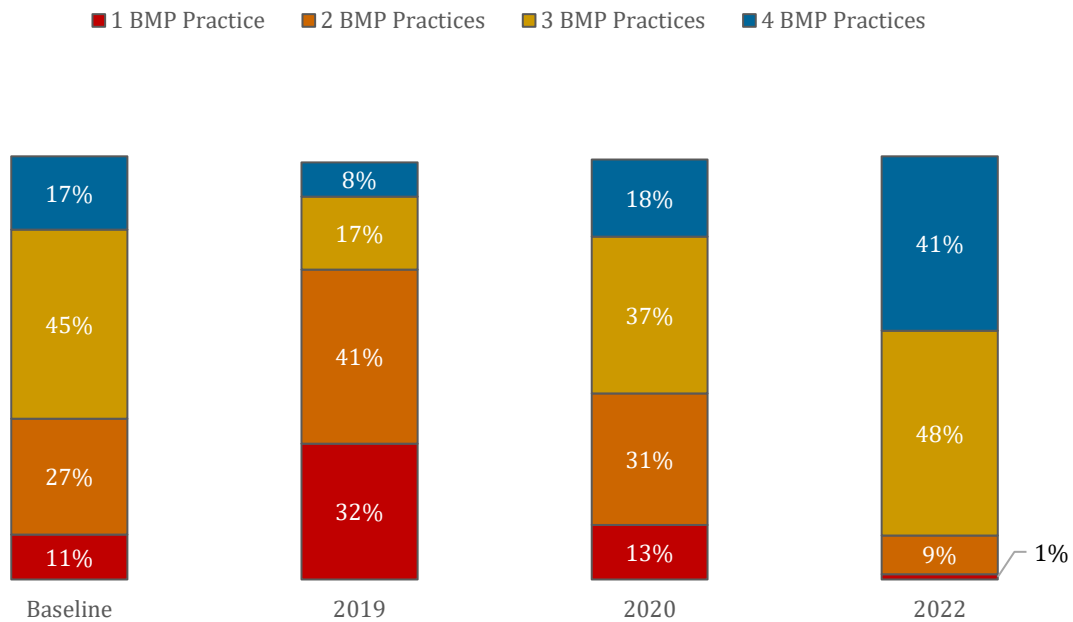
[4] Dairy BMP data for 2018 was analyzed by Nuru and shared with RMC.

Figure 4. Proportion of Farmers Engaged in BMPs by BMP Type, 2018 – 2022 (Migori)
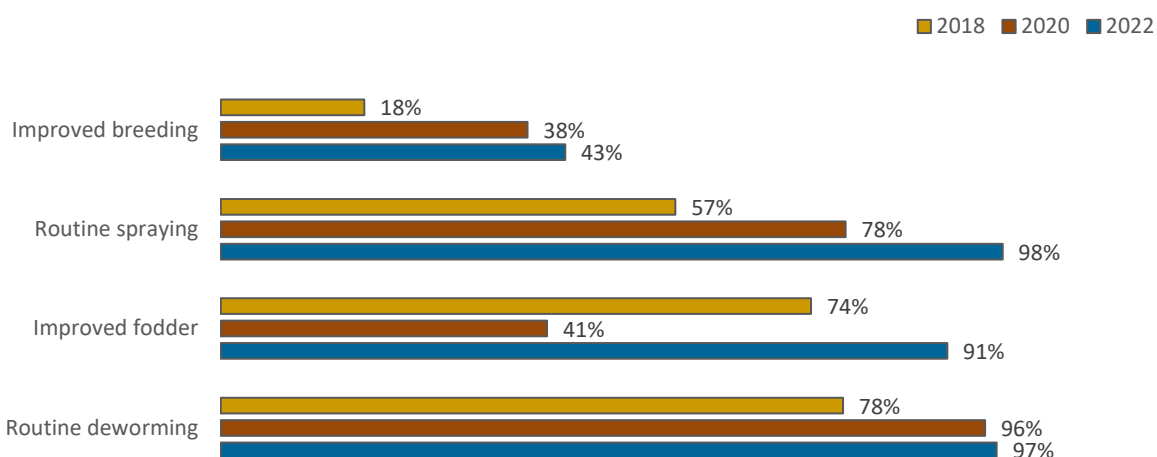
Figure 5. Proportion of Farmers Engaged in BMPs by BMP Type, 2022

Table 3. Proportion of Farmers who Administer at Least One Vaccine

| % of Farmers w/cows who vaccinate	Baseline	2019	2020	2022
Migori County	89%	75%	60%	71%
Homa Bay County	Pre-Nuru Interventions			59%

Dairy Income Model

The dairy income model found in Figure 8 represents the total average revenue made per farmer on dairy during the 2022 season. This total revenue is then broken down into an average cost estimate per farmer, and an average profit per farmer. In 2022, NK farmers in Migori saw an average annual revenue of $257, consisting of $20 in costs and $237 in profit. This represents an average annual net profit increase of 180% over baseline for dairy activities in Migori County, and a continued increase over previous timepoints.

In Homa Bay, as NK works with more developed dairy cooperatives, both profits and revenues are expected to be higher, although the return on investment from costs to profit is similar across both counties.

Consistent income increases over the years greatly assist farmers in predicting their disposable income and being able to smooth shocks and stressors they experience over the course of a given year. Despite ongoing global economic stressors resulting in shortages and price spikes for fuel, food, and many agricultural inputs, as well as ongoing local presidential elections, NK was able to see continued success for the individual farmer in terms of their revenue and profit in 2022.

Figure 8. Average Income per Farmer, Dairy, 2018-2022
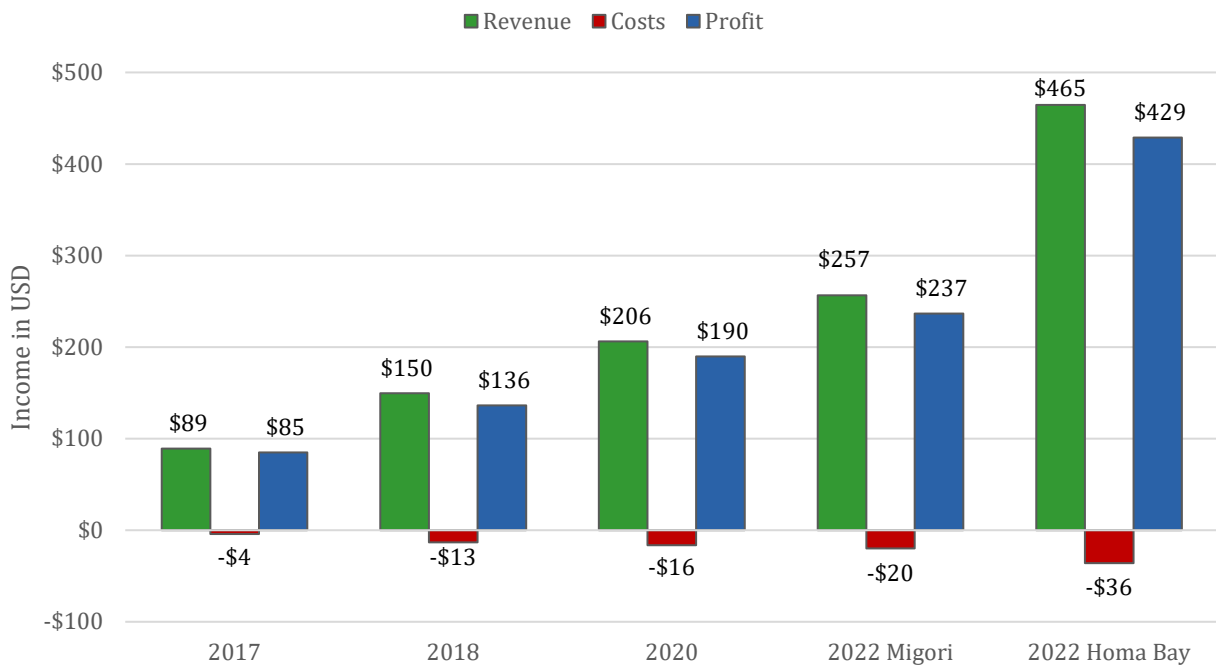
CONCLUSIONS

Dairy farmers supported by NK in 2022 continued to experience positive impacts in yield, income, and best-practice adoption. Increases in yield and income represent a fifth consecutive year of such increases, and have made a substantial effect on individual farmer wellbeing. Farmers who, in 2017, had an estimated $85 of profit per year from dairy activities now have $237 of profit in Migori County. This almost threefold increase in profit gives farmers not only the ability to expand income-generating activities, but also the ability to meet household needs, pay for healthcare and education, and much more.

As Nuru expands into Homa Bay County, there arises and opportunity to work with more developed and larger dairy cooperatives, and expand impact, yield, and incomes for new farmers and in partnership with new cooperatives. In 2023, NK will aim to expand dairy programming once more, improving the production capacity of farmers and their cooperatives, to meet the demands of the Migori and Homa Bay dairy markets, and improve rural livelihoods once more. Key findings of this 2022 Dairy Report include the following highlights:

- Nuru dairy farmers increased milk yields by 79% over the 2017 baseline, to an average of 3.22 liters per cow per day in Migori County.

- Net profit from dairy activities in 2022 was on average $237 per farmer in Migori County, an income increase of 180% over baseline in 2017.

- 89% of farmers in Migori County are now using at least 75% of 4 critical dairy best management practices, an increase from 55% of farmers in 2020.

- In Homa Bay, Nuru Kenya was able to gauge initial baseline impact from program expansion, seeing farmers with an average annual net profit of $429, and an average yield of 5.83 liters per cow per day.