NUTRITION *in* CITY ECOSYSTEMS

May 2024

# FARMERS' SURVEY

KENYA

Key insights into farming systems in **Busia**

The Nutrition in City Ecosystems (NICE) project works to improve nutrition and reduce poverty by increasing the supply of and demand for nutritious foods that are produced using agroecological practices in six secondary cities across Bangladesh, Kenya, and Rwanda. The NICE project works closely with local governments at city level and facilitates locally led actions to improve nutrition through agricultural, food, and health sector collaborations and public-private engagements, with strong emphasis on the role of women and youth entrepreneurs (see *Project Factsheet*).

**Agroecological practices** apply the concept of agroecology (utilization of ecological and social concept and principles in the design and management of sustainable agriculture and food systems) in agriculture. NICE specifically concentrates its efforts on five of the 10 main agroecology elements shaping sustainable food systems transformation: efficiency, recycling, diversity, resilience, and culture and food traditions.

*Source: FAO*

**Nutritious foods** are foods, that in the context where they are consumed and for the individuals that consume them, provide beneficial nutrients (e.g. vitamins, major and trace minerals, essential amino acids, essential fatty acids, dietary fibre) while being poor on potentially harmful elements (e.g. antinutrients, quantities of saturated fats and sugars etc.)

*Source: GAIN*

The six cities where NICE works are secondary cities, characterized by a relatively modest spatial scale and a physical proximity to rural areas, distinguishing them from primary or mega-cities. In these cities, food producers reside close to urban consumers, making shorter food supply chains with fewer intermediaries at least a possibility. The potential for direct producer-to-consumer connection offers practical opportunities for transforming food systems, notwithstanding it is quite common even for urban and peri-urban households to produce small amounts of food at the homestead in these contexts.

This short report gives the result of a farmers' survey held in May 2024 in Busia, Kenya. Busia is a secondary city in Busia county, bordering with Uganda and situated in the Lake Victoria Basin. The climate in Busia is a moisty tropical climate with a slightly higher amount of precipitation in the first half of the year compared to the second half summing up in an annual rainfall of 750-2000 mm. Mean temperature is between 21-27°C. Besides agriculture and fishing, trade is another important economic activity in Busia. Agricultural production is mainly at a subsistence level.

154 rural and peri-urban farmers, representing a farming household, were interviewed in NICE's Farmers' Survey to complement more nutrition-focused data collected among urban residents in the NICE project cities. Sampling was purposive to include farmers who are producing for the local market and to interview female farmers with a target of 50%.

Data from farmers and small holders were collected using an adapted version of a tool called **S**elf-evaluation and **H**olistic **A**ssessment of climate **R**esilience of farmers and **P**astoralists (SHARP+) developed by the Food and Agriculture Organization (FAO). The SHARP+ tool collects a mix of quantitative and qualitative data on various aspects of farming households, such as fertilizer application, sales outlets, daily consumption, and more. All the questions in SHARP+ serve a dual purpose: Firstly, they help gauge the prevalence or distribution of specific practices among farmers, often presented as percentages. Secondly, they contribute to understanding farmers' resilience levels through a combined score derived from the thematic questions.

Data collection for this Farmers' Survey was approved by the local authorities and all findings have been discussed with various district stakeholders in December 2024.

# Household information

The farmers' survey in Busia covered 154 farming households. Of these, 73% were headed by males, 21% by females, and 6% were jointly headed by both.

Children (0-9), adolescents (10-19), and youth (20-35) were the predominant age groups in the surveyed farming households, indicating a population leaning towards younger individuals. The average household size among the surveyed farming households was 6.6 individuals and all surveyed farming households contained considerably more female than male household members (Figure 1).

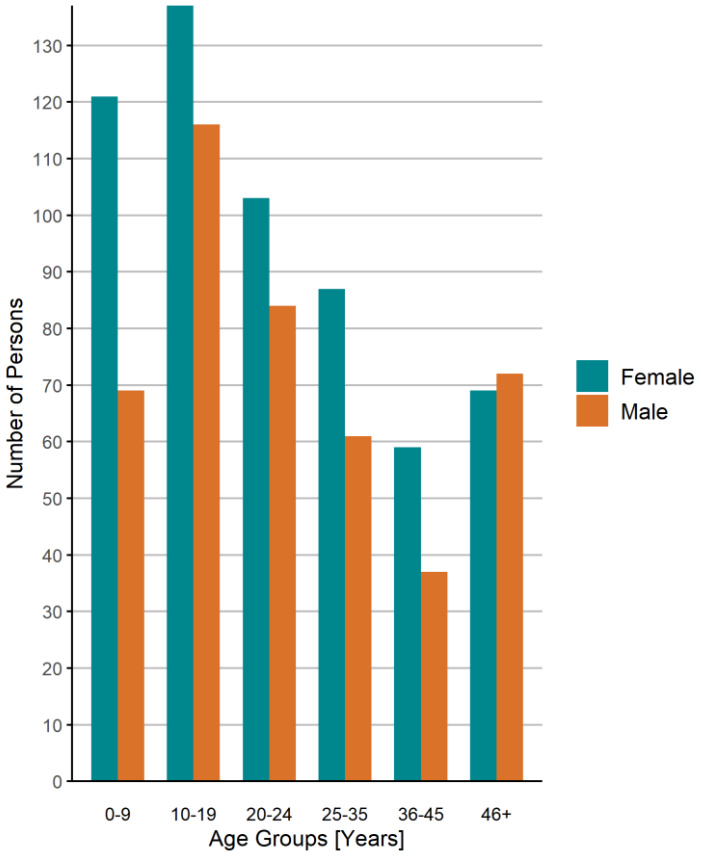



*Figure 1: Age group distribution of the sampled household population in Busia*

## Food consumption

Based on the Household Dietary Diversity Score (HDDS), 68% of the surveyed farming households have an adequately diverse diet (defined by consuming at least 5 different food groups out of 12 in the 24 hours prior the survey). On average, 6.0 different food groups have been consumed by the surveyed farming households in the last 24 hours prior survey. While quantities of the consumed foods have not been investigated, most surveyed farming households indicated to have consumed cereals (80% of the surveyed farming households), followed by fruits (65%), vegetables (63%) and roots and tubers (60%) while animal proteins such as meat or fish and seafood seem to have been consumed by only a few surveyed farming households, Figure 2.

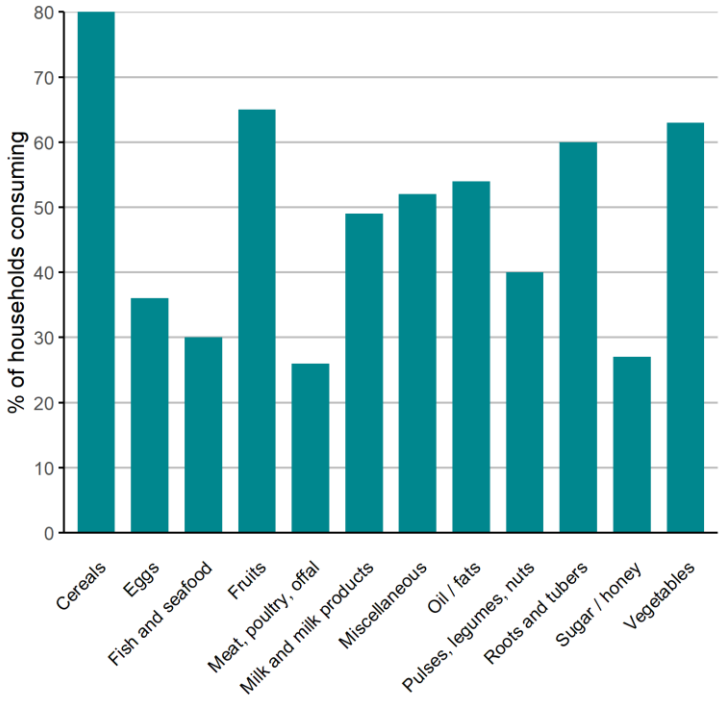
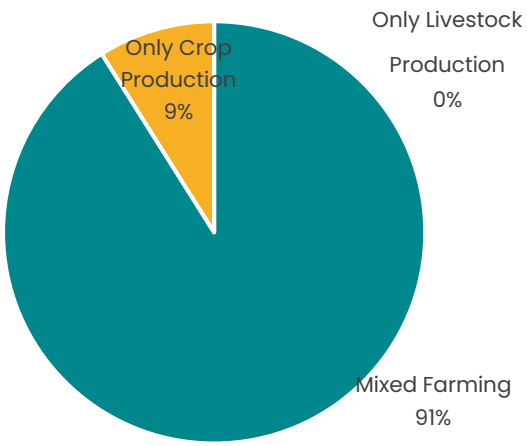



*Figure 2: Household food consumption in the 24 hours prior survey*

# Farming practices




The farming system in Busia predominantly features mixed farming practices, with 91% of respondents combining crop and livestock farming while 9% of the respondents engaged solely in crop production. 62% of the respondents also indicated to relay on non-farm income sources besides their revenue from agricultural activities. The fact that two thirds (60%) of the farmers keep some form of farming records suggests a measure of proactive management within a segment of the farming community.

*Figure 3: Different farming systems practiced in Busia*

## Crops and Livestock

The diversity of crops grown in Busia suggests a multi-faceted agricultural landscape. Maize (93%) and beans (69%), which are staple crops providing the primary sustenance for the local population, dominate the agricultural scene. Alongside these, a variety of crops, including seasonal ones that are planted and harvested within a single year, and perennial crops that live for multiple seasons and yield harvests over time, are also cultivated as shown in table 1.

*Table 1: Share of surveyed farming households practicing the production of selected crops*

| Seasonal crops[a] | % of households engaged in production | Seasonal crops[a] | % of households engaged in production | Perennial crops[b] | % of households engaged in production |
|---|---|---|---|---|---|
| **Maize** | 93% | **Tomato** | 7% | **Banana** | 51% |
| **Beans** | 69% | **Pigeon pea** | 6% | **Mango** | 22% |
| **Cowpeas** | 40% | **Pumpkin** | 5% | **Avocado** | 21% |
| **Cassava** | 36% | **Sesame** | 5% | **Sugarcane** | 20% |
| **Black nightshade** | 31% | **Arrowroot** | 4% | **Orange** | 3% |
| **Spiderplant** | 25% | **Cabbage** | 4% | **Lemon** | 2% |
| **Soybean** | 21% | **Yam** | 4% | **Coffee** | **2%** |
| **Sweet potato (white)** | 21% | **Bambara** | 2% | **Pawpaw** | **1%** |
| **Amaranthus** | 18% | **Carrots** | 2% | **Jackfruit** | **1%** |
| **Sweet potato (orange)** | 18% | **Mungbean** | 1% | | |
| **Sorghum** | 17% | | | | |
| **Groundnut** | 16% | | | | |
| **Finger millet** | 13% | | | | |
| **Onion** | 7% | | | | |

[a] Seasonal crops are plants that are cultivated and harvested during specific times of the year.
[b] Perennial crops are plants that live for multiple years and produce crops year after year.

Among the surveyed farming households in Busia and having animals on their farms (n=96), livestock farming is predominantly focused on poultry and cattle, with a considerable majority of households (80% and 75% respectively) engaged in their rearing, followed by pigs and goat rearing with 24% and 23% of households with animals involved, respectively. Only few of the respondents engaged in sheep, fish, or bees farming.

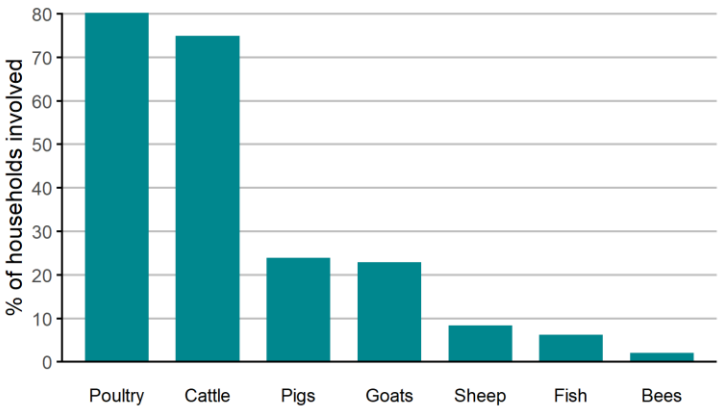


*Figure 4: Household participation in production of animals*

## Fertilizers and pest management

66% of the interviewed farmers in Busia reported the use of some form of organic or synthetic soil amendment.

Composting and the application of livestock manure are applied by more than half of the surveyed farming households, indicating a commitment to recycling organic materials within the farming system in Busia. Many farmers report to produce almost all the organic fertilizers on-farm, highlighting a strong inclination towards self-sufficiency. 54% of the farmers also report to also apply synthetic fertilizers.

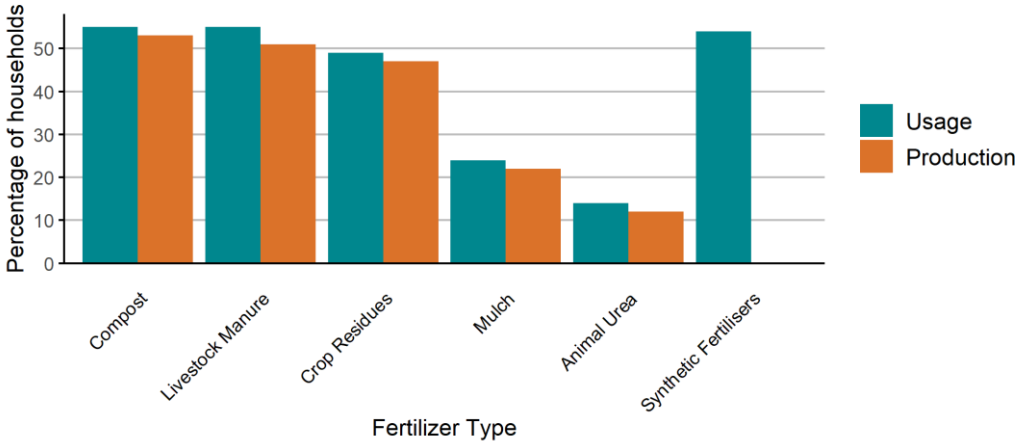



*Figure 5: Organic and Synthetic fertilizer use in Busia*

High agricultural productivity also brings a high incidence of pests. In 2024, 55% of respondents reported to have been affected by pests or diseases in the past 12 months, with the fall armyworm remaining the most significant pest, followed by aphids, caterpillars, weevils, and cutworms. In consequence of high pest and disease prevalence, 65% of the interviewed farmers practice pest and disease management, with natural pesticides applied by 49% of the surveyed farming households dominating in front of synthetic pesticides applied by 40% of the surveyed farming households.

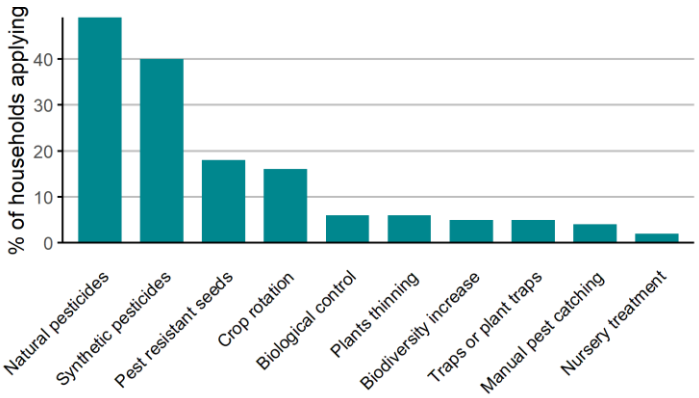



*Figure 6: Pesticide use in Busia*

## Seeds and breeds

The majority of surveyed farming households in Busia (88%) reported to make use of local crop varieties, while 51% indicated the use of newly introduced (non-native) and improved crop varieties, highlighting the tendency to combine reliance on both local, context-adapted and new, resistance-improved varieties. Similar patterns are seen for the rearing of animal breeds, all interviewed farmers involved in livestock rising indicated to have local animal breeds, while 46% of the interviewed livestock risers affirmed the rearing of newly introduced breeds and crossbreeds.

## Agroecological practices

85% of the surveyed farming households in Busia applied at least one of the 17 agroecological practices defined and promoted by SwissAid and showcased in Figure 7.

When looking closer at the 17 agroecological practices defined and promoted by SwissAid, promising tendencies are seen in Busia. More than half of the surveyed farming households are engaged in either or intercropping (65%), the application of organic fertilizers (62%), agroforestry (62%), and the use of local seeds and breeds (57%), Figure 7.

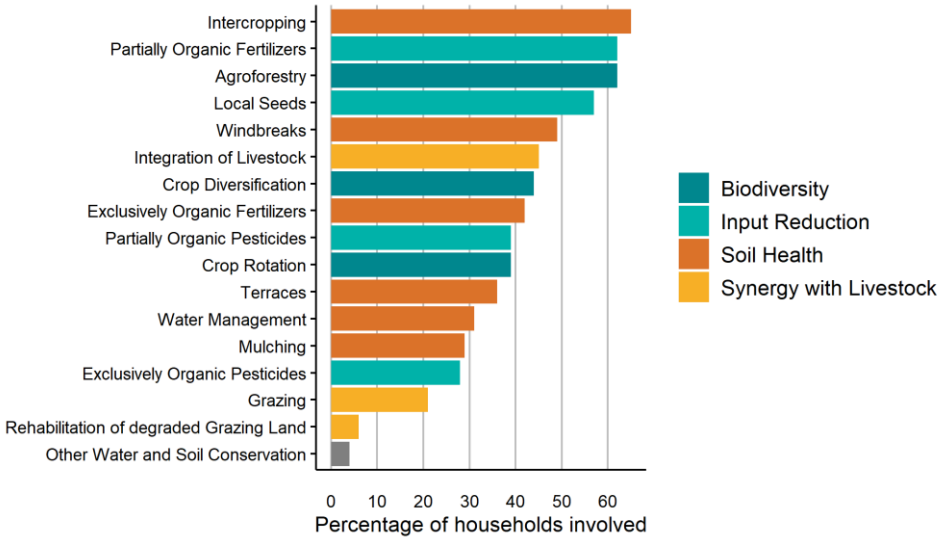



*Figure 7: Agroecological practices applied by the respondents. Agroecological practices specifically asked for are in line with definitions used in other projects, e.g. promoted by Swissaid.*

On the other hand, only very few farmers are practicing 'rehabilitation of degraded grazing land' or 'other water and soil conservation practices' (6% and 4%, respectively).

### Women participation in farming

Women > 35 years are involved in applying agroecological farming practices in 65% of the surveyed farming households in Busia, with highest contribution to intercropping (in 44% of the surveyed farming households), partial application of organic fertilizer (in 39% of the surveyed farming households), agroforestry (in 38% of the surveyed farming households), and use of local seeds (in 37% of the surveyed farming households).

Young people 15-34 years most often engage with the agroecological practices of partial application of organic fertilizer (where 60 young women and 77 young male are involved among the 154 surveyed farming households), intercropping (69 young women and 66 young men), and agroforestry (59 young women and 65 young men). Overall, young women and men 15-34 years contribute to agroecological farming in 35% of the surveyed farming households in Busia.

## Market access

### Selling locations

In Busia, 96% of the surveyed farming households indicated to sell most (50% of them) or at least a few (50% of them) of their produce. The majority of surveyed farming households prefer selling their agricultural produce directly to neighbors or through local markets (88%, Figure 8). Local and community-based commerce seems to be very important for the agricultural economy in Busia, which suggests the importance they place on convenience and accessibility.

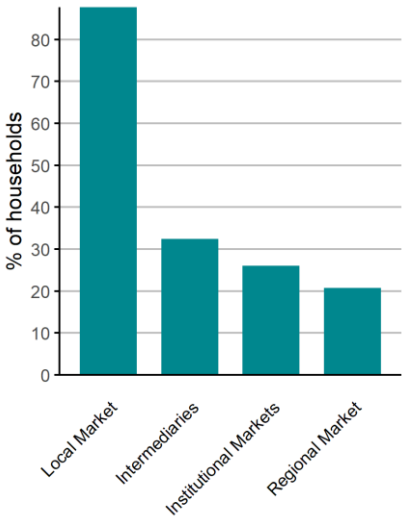



*Figure 8: Selling channels/locations of farming output in Busia*

## Post-harvest practices

61% of surveyed farming households in Busia apply at least one post-harvest value addition practice (other than immediate consumption or transportation and distribution) in at least one of their produced value chains, with packaging being the post-harvest value addition practices most often performed (36%). However, among the post-harvest value addition practices, most are actually applied for maize and beans.

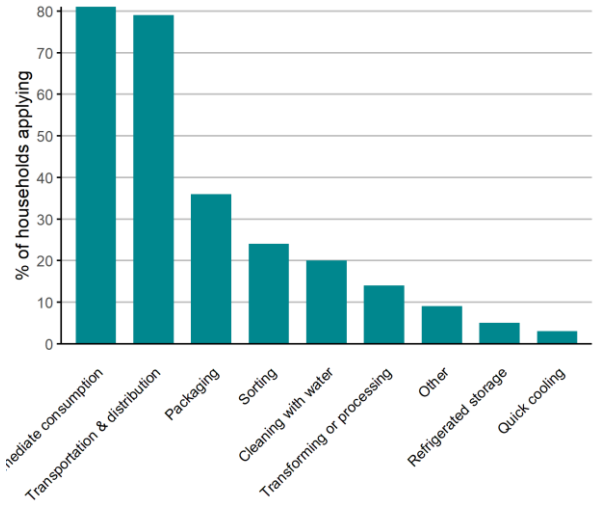



*Figure 9: Post-harvest value addition practices applied by surveyed farming households in Busia*

**Authorship:** Nutrition in City Ecosystems (NICE) project

The NICE project is supported by the Swiss Agency for Development and Cooperation and implemented by a public-private consortium that includes the Swiss Tropical and Public Health Institute, ETH Zürich, Sight and Life foundation, and the Sustainable Agriculture Foundation Africa.

Further information is available on the **NICE webpage:** *nice-nutrition.ch*