NUTRITION *in* CITY ECOSYSTEMS

May 2024

FARMERS' SURVEY

RWANDA

Key insights into farming systems in **Rusizi**

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 Rusizi, Rwanda. Rusizi is a secondary city within Rwanda's Western Province. In terms of agricultural production, Rusizi is characterized by volcanic fertile and a tropical climate with average temperatures ranging between 20°C and 23 °C, yet farmers are often limited to subsistence farming.

Hundred-fifty-two 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 Rusizi covered 152 farming households. Of these, 84% were headed by males, 11% by females, and 3% were jointly headed by both.

Children (0-9) and adolescents (10-19) 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 6.0 individuals.

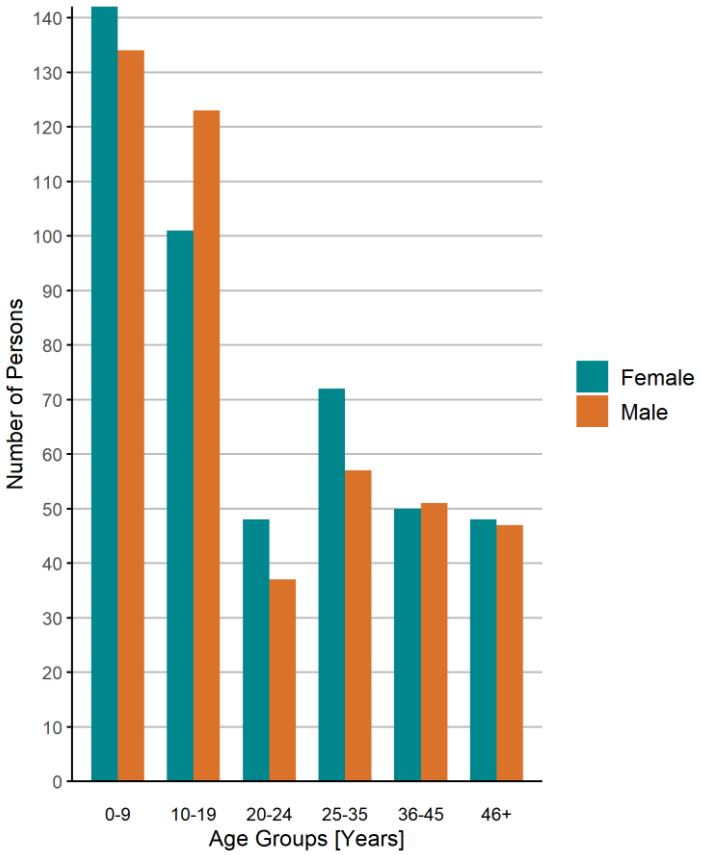


Figure 1: Age group distribution of the sampled household population in Rusizi

Food consumption

Based on the Household Dietary Diversity Score (HDDS), 53% 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, 4.9 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 roots and tubers (72% of the surveyed farming households), followed by oil / fats (68%), and vegetables (64%) while animal proteins such as meat, poultry and offals, fish and seafood, milk and milk products, and eggs seem to have been consumed by only a few surveyed farming households, Figure 2.

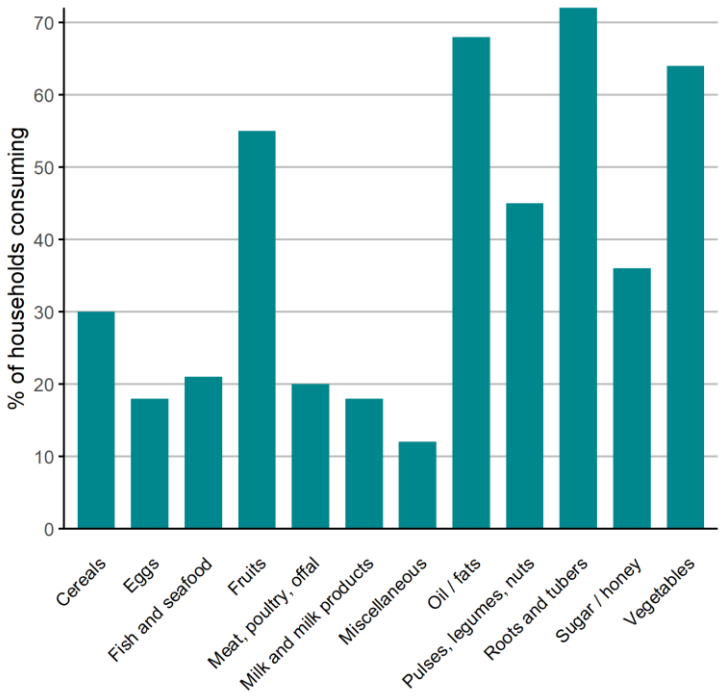
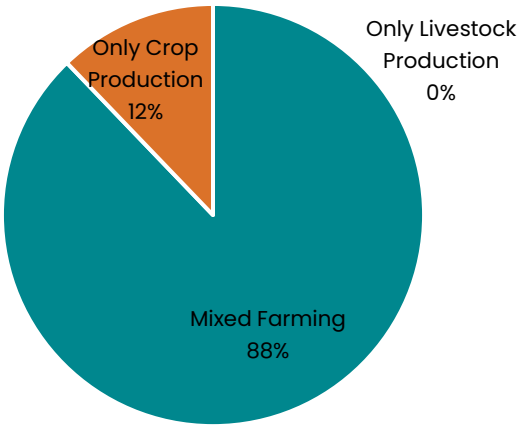


Figure 2: Household food consumption in the 24 hours prior survey

Farming practices



The farming system in Rusizi predominantly features mixed farming practices, with 88% of respondents combining crop and livestock farming while 12% of the respondents engaged solely in crop production. 30% of the respondents also indicated to relay on non-farm income sources besides their revenue from agricultural activities and also 30% of the responding farmers keep some form of farming records, suggesting a measure of proactive management within a smaller segment of the farming community.

Figure 3: Different farming systems practiced in Rusizi

Crops and Livestock

The diversity of crops grown in Rusizi suggests a multi-faceted agricultural landscape. Crops predominantly cultivated in Rusizi are presented 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
Beans	92%	**Alfalfa**	7%	**Cassava**	63%
Maize	78%	**Gravelia**	7%	**Banana**	24%
Bambara	57%	**Other leguminous trees**	7%	**Passion fruit**	23%
Sweet potato	42%	**Irish potato**	6%	**Avocado**	20%
Other leguminous plants	27%	**Peas**	6%	**Tree Tomato**	15%
Cabbage	17%	**Cowpea**	4%	**Mango**	6%
Soybean	11%	**Sorghum**	2%		
Groundnut	9%	**Onion**	1%		

[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 livestock farming households in Rusizi (n=102), livestock farming is predominantly focused on poultry and pigs, with 37% and 31% of all livestock farmers actually engaged in their rearing, respectively. Only few of the respondents engaged in sheep, fish or bees farming.

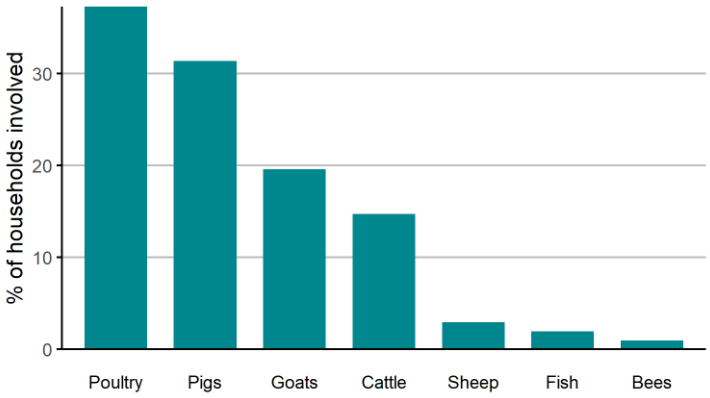


Figure 4: Household participation in production of animals

Fertilizers and pest management

82% of the interviewed farmers in Rusizi reported the use of some form of organic or synthetic soil amendment.

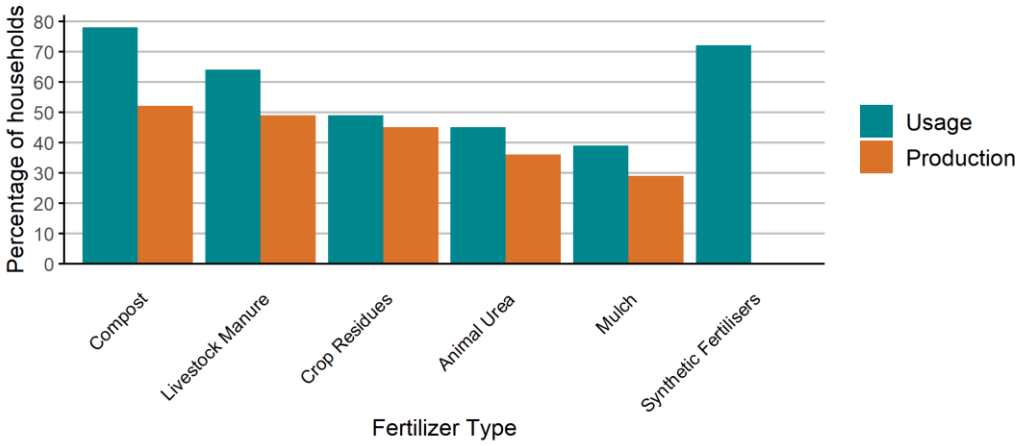


Figure 5: Organic and synthetic fertilizer use in Rusizi

Composting (78% of surveyed farming households), the use of livestock manure (64%) and the application of synthetic fertilizers (72%) are by far the most common fertilization practices and are applied by more than half of the surveyed farming households in Rusizi. Around half of the farmers also reported to produce their compost (52%) and livestock manure (49%) as well as crop residues (45%) themselves on-farm, highlighting a strong inclination towards self-sufficiency for many applicants of organic fertilization practices. Synthetic fertilizers are applied by 72% of the surveyed farming households.

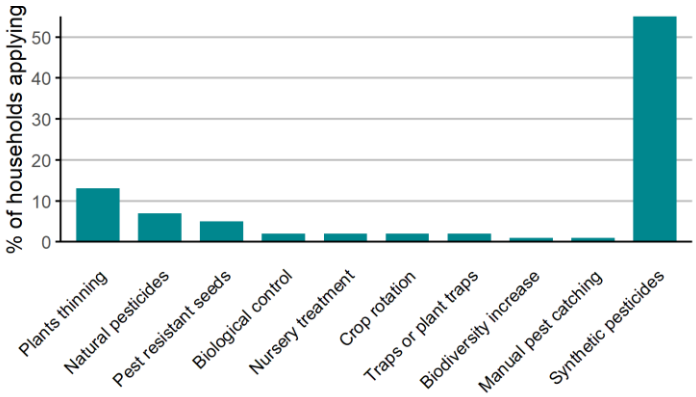


Figure 6: Pesticide use in Rusizi

High agricultural productivity also brings a high incidence of pests. In 2024, more than half of the surveyed farming households in Rusizi (54%) reported to have been affected by pests or diseases in the past 12 months. In consequence of high pest and disease prevalence, 65% of the interviewed farmers practice pest and disease management, with synthetic pesticides being by far the most commonly applied solution (55% of the surveyed farming households).

Seeds and breeds

The majority of surveyed farming households in Rusizi (68%) reported to make use of local crop varieties, while 32% indicated the use of newly introduced (non-native) and improved crop varieties, highlighting the tendency to relay on either or local, context-adapted varieties or new, resistance-improved varieties but not combining them. Similar patterns are seen for the rearing of animal breeds, 89% of interviewed farmers having livestock on their farms the last 12 months indicated to have local animal breeds, while only 46% of them affirmed the rearing of newly introduced breeds and crossbreeds showcasing a certain start to combining local, context-adapted varieties with new, resistance-improved breeds.

Agroecological practices

91% of the surveyed farming households in Rusizi applied at least one of the 17 agroecological practices defined and promoted by SwissAid and showcased in Figure 7. Concretely, more than half of surveyed farming households (54%) at least applied crop rotation, while all the other probed practices are applied by less than half of the surveyed farming households only, with lowest shares found for exclusively organic pest management, grazing, and the rehabilitation of grazing lands, Figure 7.

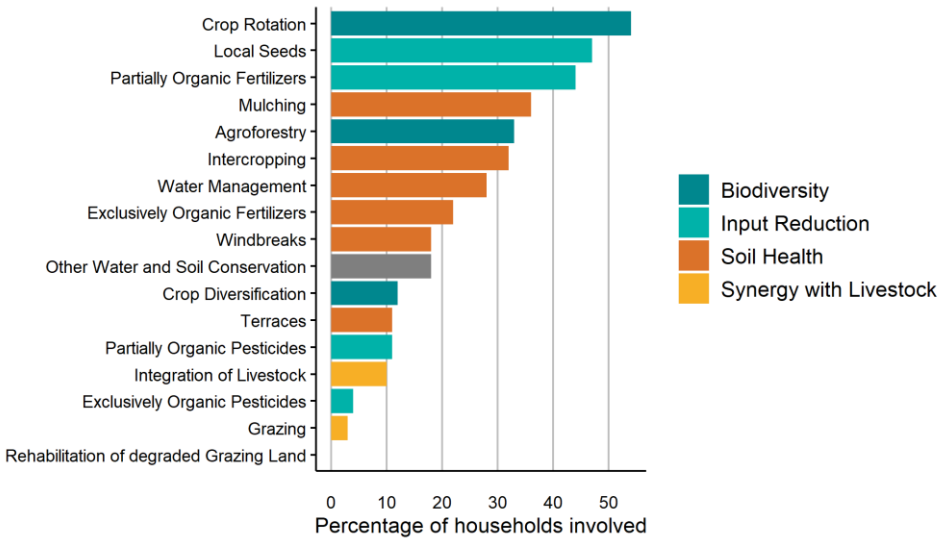


Figure 7: Agroecological practices applied by the respondents. Agroecological practices specifically asked for are in line with definitions used in other projects, e.g. promoted by Swissaid.

Women participation in farming

Women > 35 years are involved in applying agroecological farming practices in 55% of the surveyed farming households in Rusizi, with highest contribution the application of organic pest management, mulching, use of local seeds and integration of livestock into crop production.

Young people 15-34 years most often engage with the agroecological practices of partial application of organic fertilizer (where 54 young women and 41 young men are involved among the 152 surveyed farming households), crop rotation (58 young women and 36 young men) and the use of local seeds (54 young women and 33 young men). Overall, young women 15-34 years are involved in agroecological farming practices in 40% of the surveyed farming households in Rusizi and young men 15-34 years in 29% of them.

Market access

Selling locations

In Rusizi, 75% of the surveyed farming households indicated to sell most (27% of them) or at least a few (73% of them) of their produce. The majority of surveyed farming households prefer selling their agricultural produce directly to neighbors or through local markets (71%, Figure 8). Local and community-based commerce seems to be very important for the agricultural economy in Rusizi, which suggests the importance they place on convenience and accessibility.

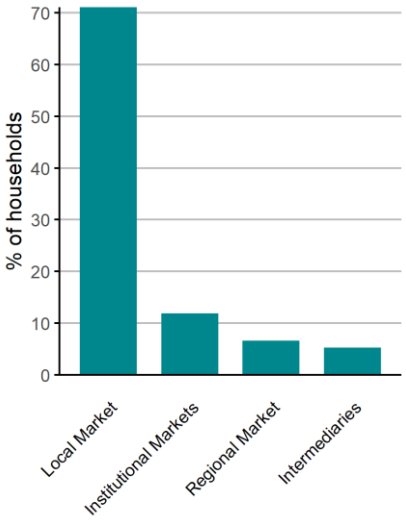


Figure 8: Selling channels/locations of farming output in Rusizi

Post-harvest practices

51% of surveyed farming households in Rusizi 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 (34%).

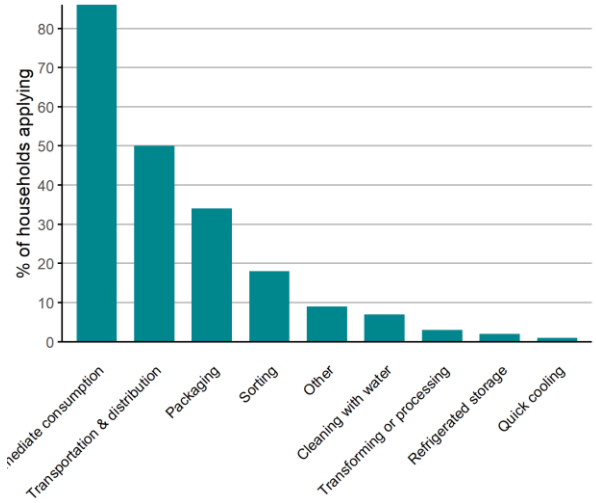


Figure 9: Post-harvest value addition practices applied by surveyed farming households in Rusizi

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*