NUTRITION *in* CITY ECOSYSTEMS

May 2024

FARMERS' SURVEY

BANGLADESH

Key insights into farming systems in **Rangpur**

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 Rangpur, Bangladesh. Rangpur City Corporation is situated on the banks of the Ghaghat River within Rangpur district in northwestern Bangladesh. The local climate is one of high humidity with plenty of rainfall. Temperatures range from about 10°C in January to around 30°C in the hottest season. Rangpur city is a commercial hub that serves its surrounding districts. City dwellers are thus mostly involved in non-farming activities, but Rangpur's agricultural production still allows export to the rest of the country of about 50-60% of all agro-food produce.

Hundred-fifty-eight 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.

Household information

The farmers' survey in Rangpur covered 158 farming households. Of these, 82% were headed by males, 9% by females, and 8% were jointly headed by both. Age and sex distribution among the surveyed farming households in Rangpur is presented in Figure 1.

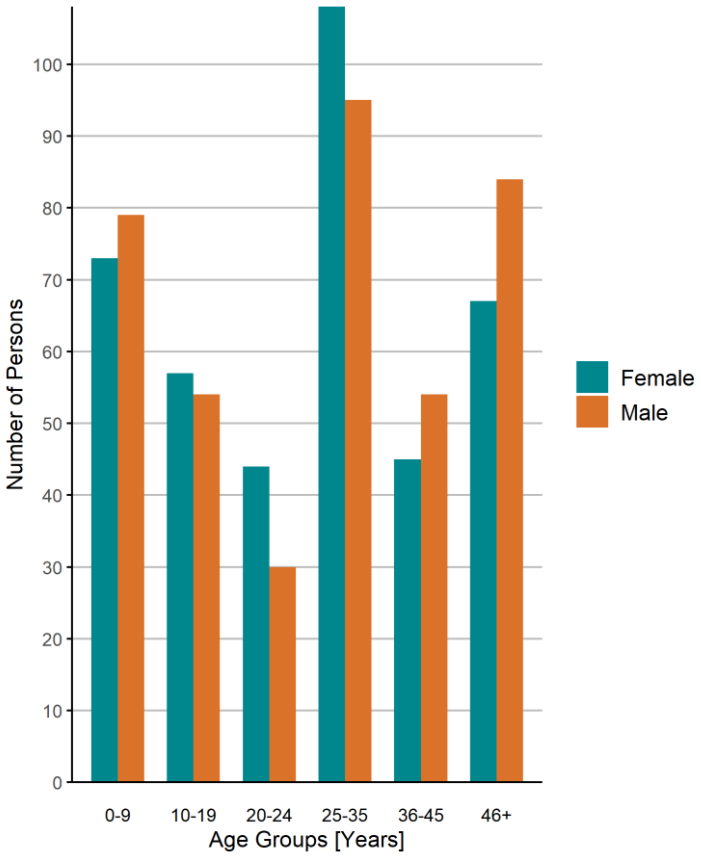

Figure 1: Age group distribution of the sampled household population in Rangpur

Food consumption

Based on the Household Dietary Diversity Score (HDDS), dietary diversity in Rangpur is high with 98% of the surveyed farming households in Rangpur consuming at least 5 different food groups out of 12 in the 24 hours prior the survey and a mean HDDS score of 8.5. While quantities of the consumed foods have not been investigated, nearly all surveyed farming households indicated to have consumed vegetables (98% of the surveyed farming households), cereals (98%), and fruits (95%) in the 24 hours prior survey. Consumption of roots and tubers and fish and seafood are less common in Rangpur, with less than 50% of the surveyed farming households reporting their consumption, Figure 2.

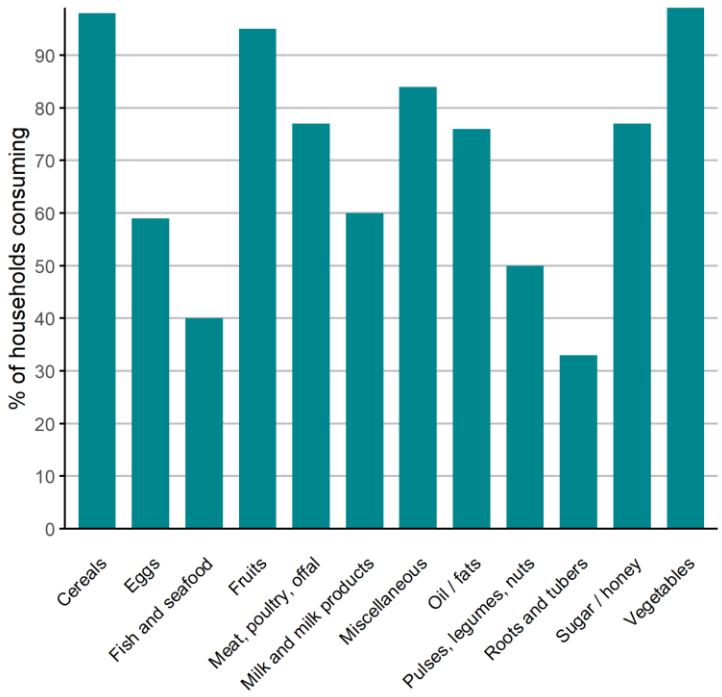

Figure 2: Household food consumption in the 24 hours prior survey

Farming practices

Mixed farming systems were the most prevalent in Rangpur, with 97% of the surveyed households in Rangpur combining both, crop and livestock farming while a minority of 3% exclusively focused on crop production only. All respondents also indicated to relay, at least a little, on non-farm income sources besides their revenue from agricultural activities, and 70% of the surveyed farming households affirm thorough record keeping, highlighting proactive farm management.

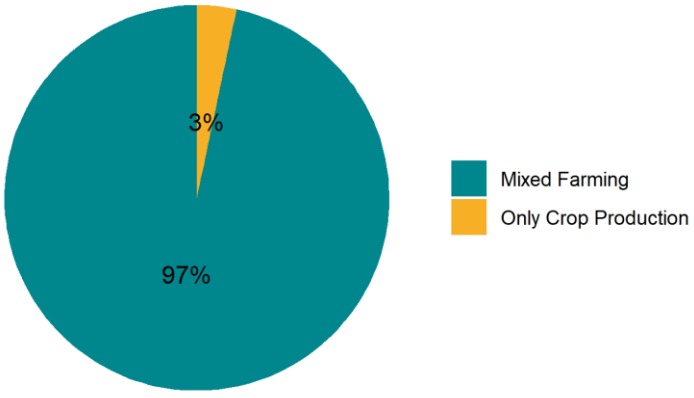

Figure 3: Different farming systems practiced in Rangpur

Crops and Livestock

The diversity of crops grown in Rangpur suggests a multi-faceted agricultural landscape. Crops predominantly cultivated in Rangpur 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
Rice	94%	**Cauliflower**	30%	**Mango**	94%
Chilli	72%	**Sweet gourd**	30%	**Guava**	52%
Brinjal	69%	**Cabbage**	28%	**Lemon**	48%
Potato	58%	**Drumsticks**	20%	**Litchi**	43%
Bottle gourd	51%	**Zn biofortified rice**	13%		
Bitter gourd	44%	**Sponge gourd**	13%		
Tomato	41%	**Wheat**	3%		
Cucumber	34%				

[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 households interviewed in Rangpur, livestock farming is predominantly focused on cattle, goats and poultry farming, with a considerable majority of households (87%, 80%, and 63% respectively) engaged in their rearing. Sheep, pigs and buffalo farming was also reported by a very few surveyed farming households.

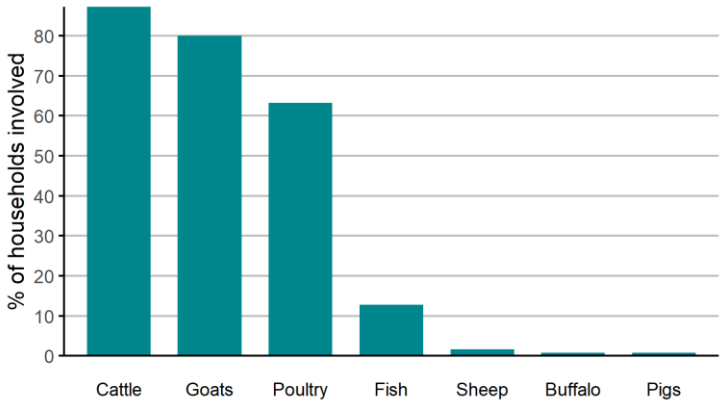

Figure 4: Household participation in production of animals

Fertilizers and pest management

73% of the interviewed farmers in Rangpur reported the use of some form of organic or synthetic soil amendment.

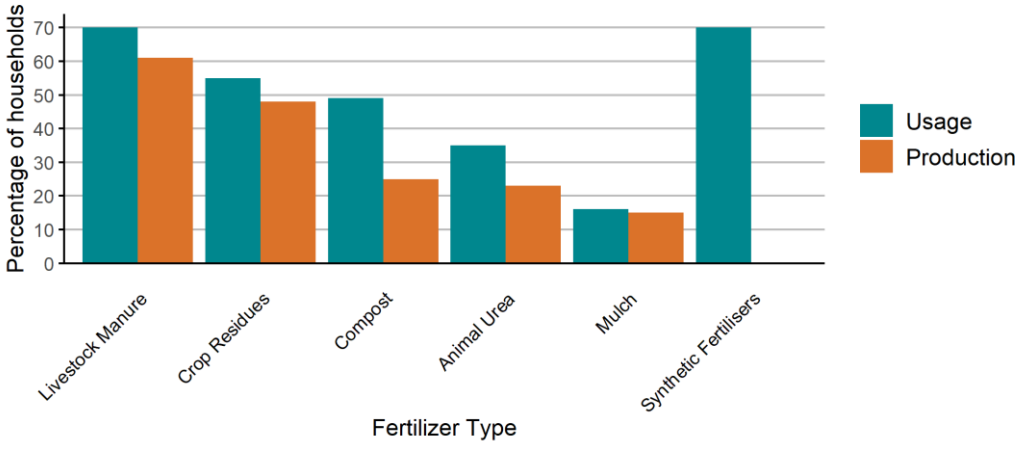

Figure 5: Organic and Synthetic fertilizer use in Rangpur

The use of livestock manure and the application of synthetic fertilizers are by far the most common fertilization practices in Rangpur, both applied by 70% of the surveyed farming households, followed by the application of crop residues also applied by more than half of the surveyed farming households (55%) and the use of compost that nearly half of all surveyed farming households applied (49%). More than half of the farmers also reported to produce their livestock manure themselves on-farm (61% of all surveyed farming households), while for crop residues it was 48%, highlighting a strong inclination towards self-sufficiency for many applicants of organic fertilization practices, even though for only have of the compost appliers actually produce their compost on-farm (25% of the surveyed farming households, Figure 5).

High agricultural productivity also brings a high incidence of pests. In 2024, 89% of respondents reported to have been affected by pests or diseases in the past 12 months. In consequence of high pest and disease prevalence, 97% of the interviewed farmers practice pest and disease management, mainly through the use and application of synthetic fertilizers (89% of the surveyed farming households). Natural pest management applications such as pesticide traps and plant tapes, plant thinning or the usage of more pest resistant seeds only play smaller roles (application by 47%, 17%, and 15% of the surveyed farming households respectively, Figure 6).

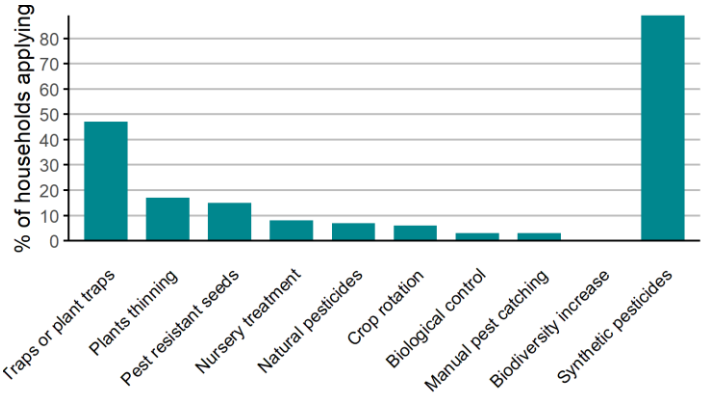

Figure 6: Pesticide use in Rangpur

Seeds and breeds

The majority of surveyed farming households in Rangpur (69%) reported to combine both, local context-adapted crop varieties and newly introduced (non-native), improved crop varieties. Among farmers not combining local context-adapted and newly introduced (non-native), improved crops, the use of only newly introduced (non-native), improved crops is dominating over the sole use of local, context-adapted crop varieties (25% vs 5% only, respectively). The pattern is a bit different in livestock farming where around half, 51% of the surveyed farming households reported the combination of both, local context-adapted breeds and newly introduced (non-native), improved breeds, while 32% of the surveyed farming households reported the rearing of local, context-adapted breeds only with only 4% of the surveyed farming households indicating to only relay on newly introduced (non-native), improved breeds for livestock farming.

Agroecological practices

99% of the surveyed farming households in Rangpur 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 Rangpur. 88% of the surveyed farming households are partially using organic fertilizers, while 70% are applying crop rotation (74%), and also more than half are using local seeds (62%), partially applying organic pesticides (61%) or perform intercropping (57%) while only little are engaged in "other" water and soil conservation practices (9%), grazing (9%), terracing (6%) or the rehabilitation of degraded grazing land (5%), Figure 7.

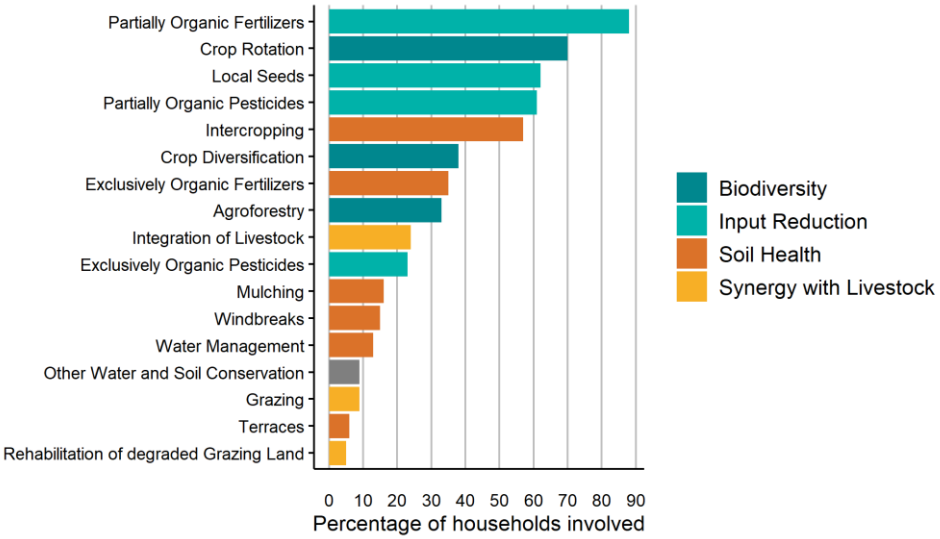

Figure 7: Agroecological practices applied by the respondents. Agroecological practices specifically asked for are in line with definitions used in other projects, e.g. promoted by Swissaid.

Women participation in farming

Women > 35 years are involved in applying agroecological farming practices in 63% of the surveyed farming households in Rangpur, with highest contribution to the partial application of organic fertilizer (in 32% of the surveyed farming households), crop rotation (27% of the surveyed farming households), intercropping (in 25% of the surveyed farming households), the use of local seeds (in 23% of the surveyed farming households), and the partial application of organic pest-management (in 20% of the surveyed farming households).

Young people 15-34 years most often engage with the agroecological practice of partial application of organic fertilizer (where 78 young women and 98 young men are involved among the 158 surveyed farming households), crop rotation (62 young women and 82 young men), use of local seeds (60 young women and 64 young men), partial application of organic pest-management (49 young women and 65 young men), and intercropping (54 young women and men both). Overall, young women 15-34 years contribute to agroecological farming in 26% of the surveyed farming households in Rangpur, and young men 15-34 years in 29% of the surveyed farming households.

Market access

Selling locations

99% of the surveyed farming households in Rangpur indicated selling most (92% of them) or at least a few (8% of them) of their produce. The majority of surveyed farming households prefer selling their agricultural produce directly to neighbors or through local markets (68%) or through regional markets (61%, Figure 8).

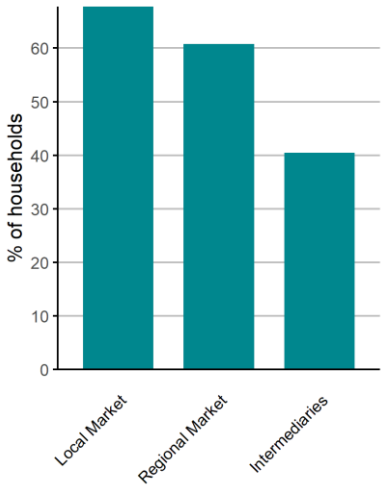

Figure 8: Selling channels/locations of farming output in Rangpur

Post-harvest practices

98% of the surveyed farming households in Rangpur 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 and nearly all surveyed farming households (95%) indicated to transform or process several of their value chains prior selling or consumption, followed by sorting practices by 41% of the surveyed farming households. Transportation & distribution, refrigerated storage and quick cooling are applied only by few of the surveyed farming households (9%, 9%, and 1%, respectively, Figure 9).

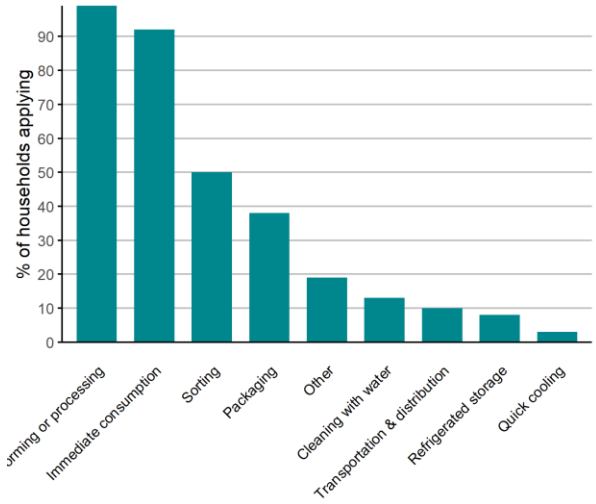

Figure 9: Post-harvest value addition practices applied by surveyed farming households in Rangpur

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 Bangladesh.

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