NUTRITION *in* CITY ECOSYSTEMS

May 2024

FARMERS' SURVEY

BANGLADESH

Key insights into farming systems in **Dinajpur**

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 Dinajpur, Bangladesh. Dinajpur municipality is part of the wider Dinajpur district in north-western Bangladesh. In terms of climate, Dinajpur faces few but heavy rains during the monsoon. Average daily temperatures for much of the year are around 30°C, and about 16°C from November to January. Dinajpur's economy mainly depends on agriculture with a strong focus on rice production.

Hundred-forty-six 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 Dinajpur covered 146 farming households. Of these, 80% were headed by males, 8% by females, and 12% were jointly headed by both. Age and sex distribution among the surveyed farming households in Dinajpur is presented in Figure 1.

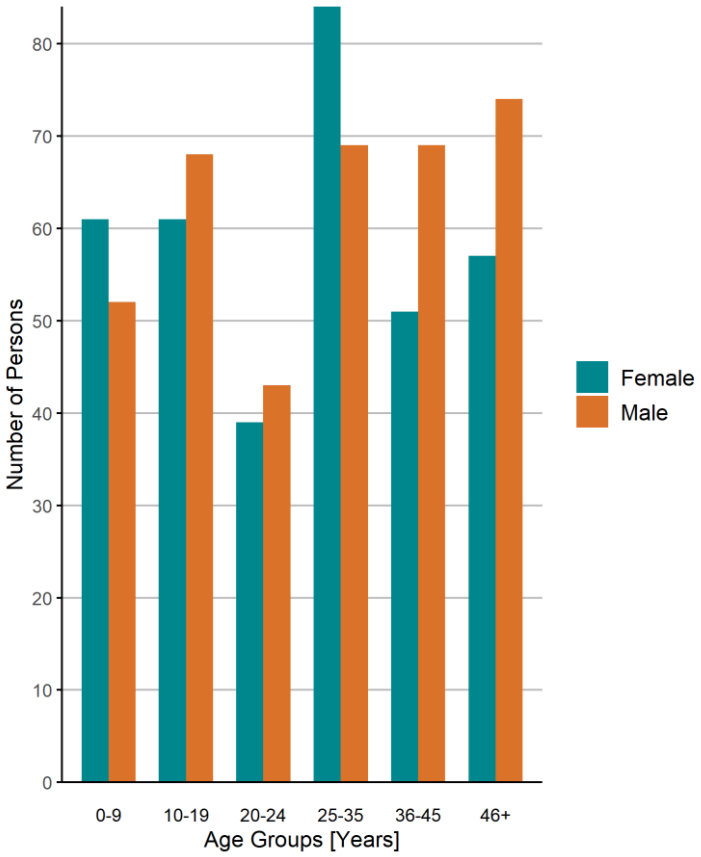

Figure 1: Age group distribution of the sampled household population in Dinajpur

Food consumption

Based on the Household Dietary Diversity Score (HDDS), dietary diversity in Dinajpur is high with all surveyed farming households in Dinajpur consuming at least 5 different food groups out of 12 in the 24 hours prior the survey and a mean HDDS score of 8.4. While quantities of the consumed foods have not been investigated, nearly all surveyed farming households indicated to have consumed cereals (98% of the surveyed farming households), vegetables (97%), and fruits (94%) in the 24 hours prior survey. Consumption of roots and tubers and fish and seafood are less common in Dinajpur, with less than 50% of the surveyed farming households reporting their consumption, Figure 2.

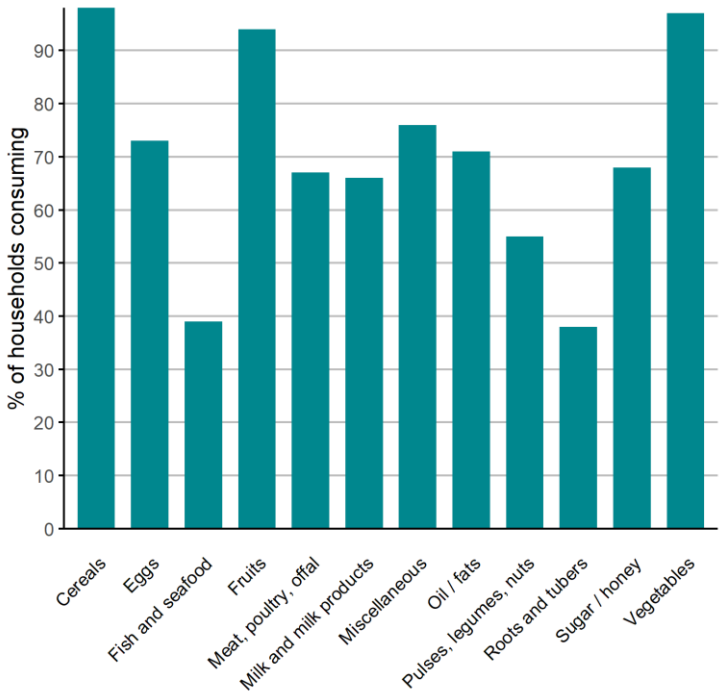

Figure 2: Household food consumption in the 24 hours prior survey

Farming practices

Mixed farming systems were the most prevalent in Dinajpur, with 97% of the surveyed households in Dinajpur combining both, crop and livestock farming while a minority of 2% exclusively focused on crop production only and a negligible 1% dedicated solely to livestock production. 98% of the respondents also indicated to relay, at least a little, on non-farm income sources besides their revenue from agricultural activities, and 78% of the surveyed farming households affirm thorough record keeping, highlighting proactive farm management.

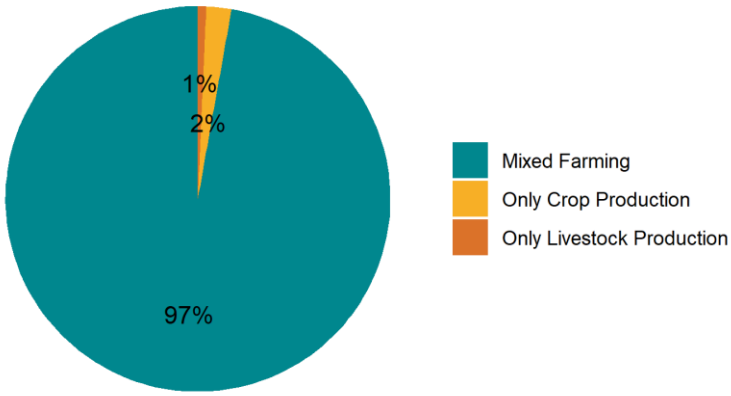

Figure 3: Different farming systems practiced in Dinajpur

Crops and Livestock

The diversity of crops grown in Dinajpur suggests a multi-faceted agricultural landscape. Crops predominantly cultivated in Dinajpur 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	93%	**Cauliflower**	27%	**Mango**	86%
Potato	86%	**Drumsticks**	27%	**Guava**	53%
Brinjal	70%	**Sweet gourd**	25%	**Lemon**	44%
Chilli	68%	**Cabbage**	21%	**Litchi**	37%
Bitter gourd	52%	**Sponge gourd**	8%		
Bottle gourd	44%	**Wheat**	2%		
Tomato	36%	**Zn biofortified rice**	1%		
Cucumber	33%				

[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 Dinajpur having animals on their farms (n=112), livestock farming is predominantly focused on cattle, goats, and poultry with 94%, 6879% and 74% of all farmers with livestock on their farm engaged in respective rearing. 11% of the surveyed farming households also reported aquaculture, while nearly no one is rearing sheep.

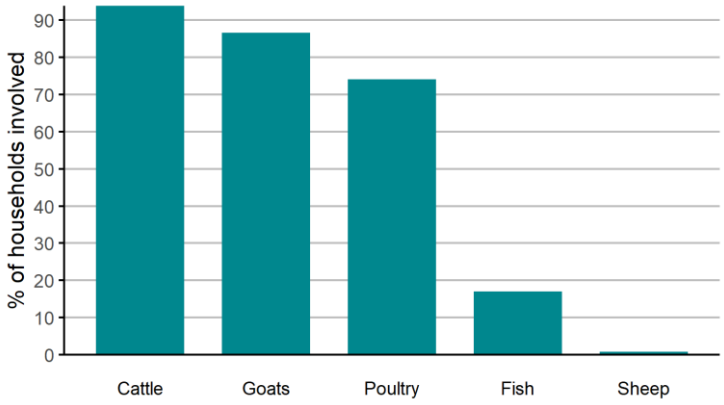

Figure 4: Household participation in production of animals

Fertilizers and pest management

79% of the interviewed farmers in Dinajpur reported the use of some form of organic or synthetic soil amendment.

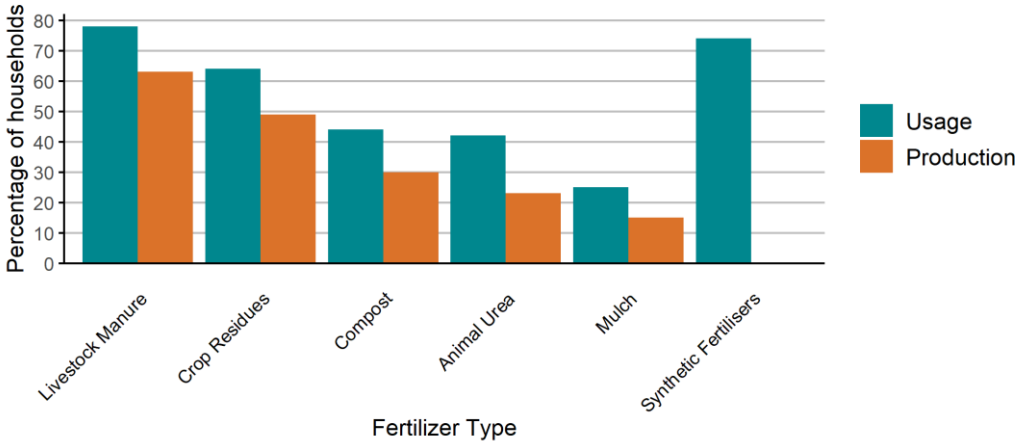

Figure 5: Organic and Synthetic fertilizer use in Dinajpur

The use of livestock manure (78% of surveyed farming households), the use of crop residues (64%) and the application of synthetic fertilizers (74%) are by far the most common fertilization practices and are applied by more than half of the surveyed farming households in Dinajpur. More than half of the farmers also reported to produce their livestock manure (63%) themselves on-farm, while for crop residues it was 49%, highlighting a strong inclination towards self-sufficiency for many applicants of organic fertilization practices.

High agricultural productivity also brings a high incidence of pests. In 2024, 94% of respondents reported to have been affected by pests or diseases in the past 12 months. In consequence of high pest and disease prevalence, 98% 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 or the usage of more pest resistant seeds only play smaller roles (application by 27% and 21% of the surveyed farming households respectively).

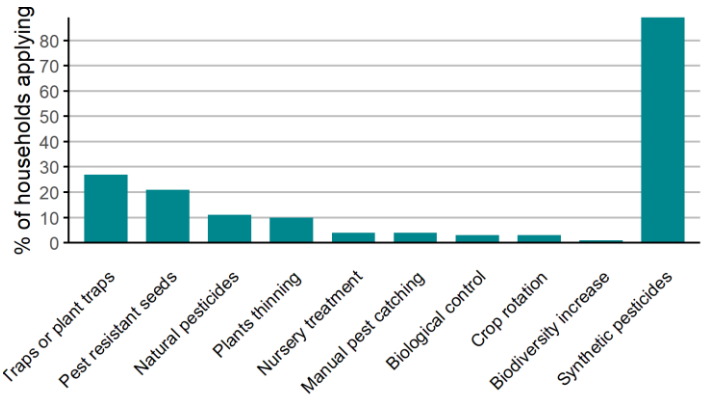

Figure 6: Pesticide use in Dinajpur

Seeds and breeds

The majority of surveyed farming households in Dinajpur (51%) reported to combine both, local context-adapted crop varieties and newly introduced (non-native), improved crop varieties, in line with the use of pest resistant seed applied as an important pest-management practice. 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 16% of the surveyed farming households in Dinajpur, respectively). A slightly similar pattern is found in livestock farming, 43% of the surveyed farming households reported the combination of both, local context-adapted breeds and newly introduced (non-native), improved breeds, while 41% of the surveyed farming households reported the rearing of local, context-adapted breeds only with only 5% 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 Dinajpur 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 Dinajpur. Nearly all of the surveyed farming households (90%) are partially using organic fertilizers (90%) and more than half are applying crop rotation (74%), are partially applying organic

pesticides (68%), are using local seeds (67%) or are practicing intercropping (60%) while only little are mulching their fields (11%), rehabilitating degraded grazing land (10%) or terracing their fields (8%), Figure 7. 42% of the surveyed farming households reported to exclusively use organic fertilizers and 34% of the surveyed farming households reported the exclusive use of organic pesticides contradicting the reporting of the use of synthetic pesticides by 90% of the surveyed farming households in another question.

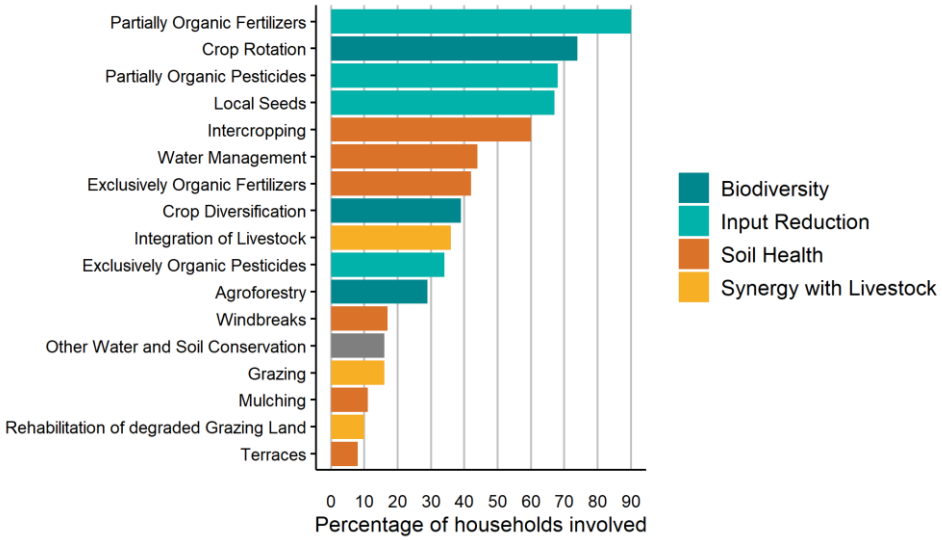

Figure 7: Agroecological practices applied by the respondents. Agroecological practices specifically asked for are in line with definitions used in other projects, e.g. promoted by Swissaid.

Women participation in farming

Women > 35 years are involved in applying agroecological farming practices in 65% of the surveyed farming households in Dinajpur, with highest contribution to the partial application of organic fertilizer (in 29% of the surveyed farming households), the use of local seeds (in 27% of the surveyed farming households), crop rotation (in 26% of the surveyed farming households), intercropping (in 24% of the surveyed farming households), and the partial application of organic pest-management (in 21% of the surveyed farming households).

Young people 15-34 years most often engage with the agroecological practice of partial application of organic fertilizer (where 68 young women and 95 young men are involved among the 146 surveyed farming households), crop rotation (70 young women and 89 young men), use of local seeds (63 young women and 66 young men), and intercropping (63 young women and 58 young men). Overall, young women 15-34 years contribute to agroecological farming in 31% of the surveyed farming households in Dinajpur, and young men 15-34 years in 29% of the surveyed farming households.

Market access

Selling locations

All surveyed farming households in Dinajpur indicated selling most (86% of them) or at least a few (14% of them) of their produce. The majority of surveyed farming households prefer selling their agricultural produce to regional markets (63%) or directly to neighbors or through local markets (60%, Figure 8).

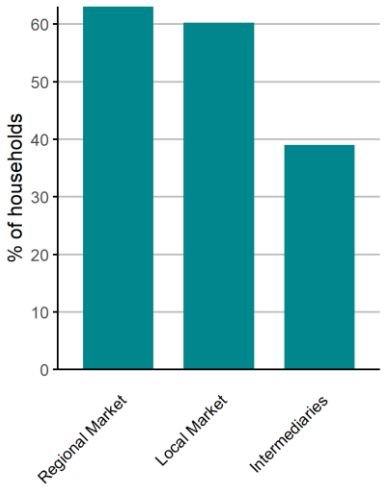

Figure 8: Selling channels/locations of farming output in Dinajpur

Post-harvest practices

All surveyed farming households in Dinajpur 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 (99%) indicated to transform or process several of their value chains prior selling or consumption, followed by sorting practices by 50% of the surveyed farming households and packaging practiced by 38% of the surveyed farming households. Refrigerated storage and quick cooling are applied only by few of the surveyed farming households (8% and 3%, respectively, Figure 9).

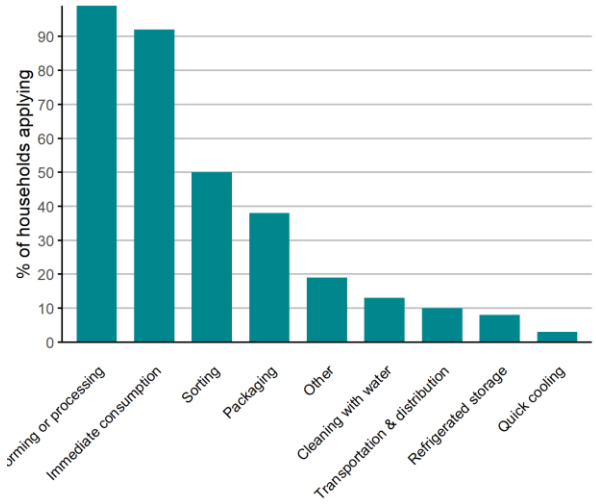

Figure 9: Post-harvest value addition practices applied by surveyed farming households in Dinajpur

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*