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Impacts of COVID-19 on Aquatic Food Supply Chains in Bangladesh

February – July 2020

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About FISH

The [CGIAR Research Program on Fish Agri-Food Systems \(FISH\)](#) is a multidisciplinary research program. Designed in collaboration with research partners, beneficiaries and stakeholders, FISH develops and implements research innovations that optimize the individual and joint contributions of aquaculture and small-scale fisheries to reducing poverty, improving food and nutrition security and sustaining the underlying natural resources and ecosystems services upon which both depend. The program is led by [WorldFish](#), a member of the CGIAR Consortium. [CGIAR](#) is a global research partnership for a food secure future.

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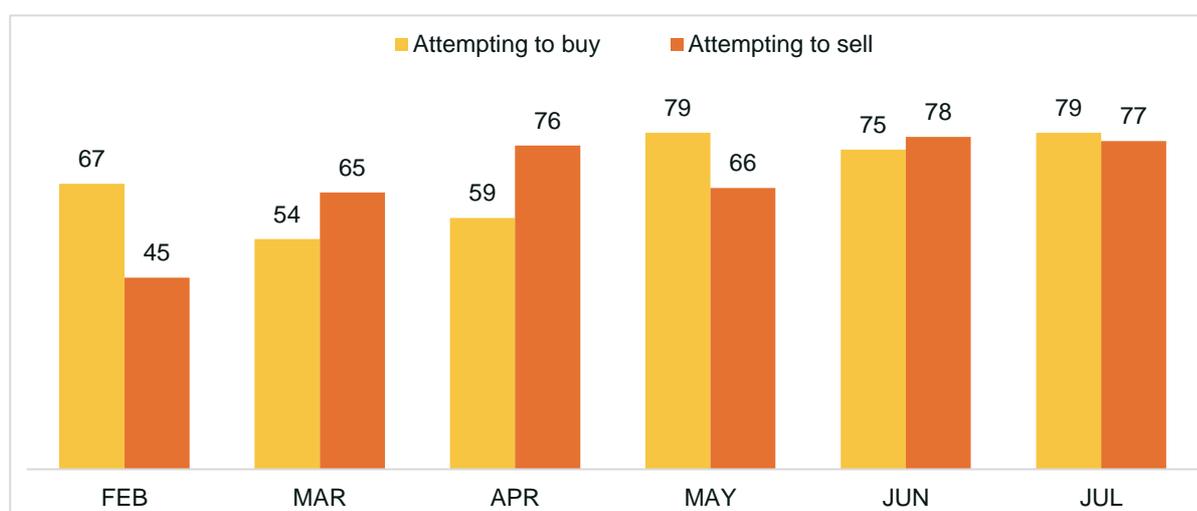
Overview

We conducted a monthly phone survey with fish supply chain actors in Bangladesh to assess the impacts of COVID-19 on the availability and price of aquatic foods and production inputs. Respondents answered questions about their activity between the months of February and July 2020. The sample totalled 105 respondents, comprised of the following: feed mills (3), feed sellers (14), fish hatcheries (10), fish farmers (25), fishers (24), traders (10), processors (8) and retailers (11). The areas covered included Khulna (22%), Chittagong (23%), Barisal (18%), Rajshahi (13%), Dhaka (7%), Mymensingh (6%), Sylhet (6%), Rangpur (3%), Pabna (2%), Noakhali (1%). A complete summary of survey results can be accessed [here](#).

Key findings

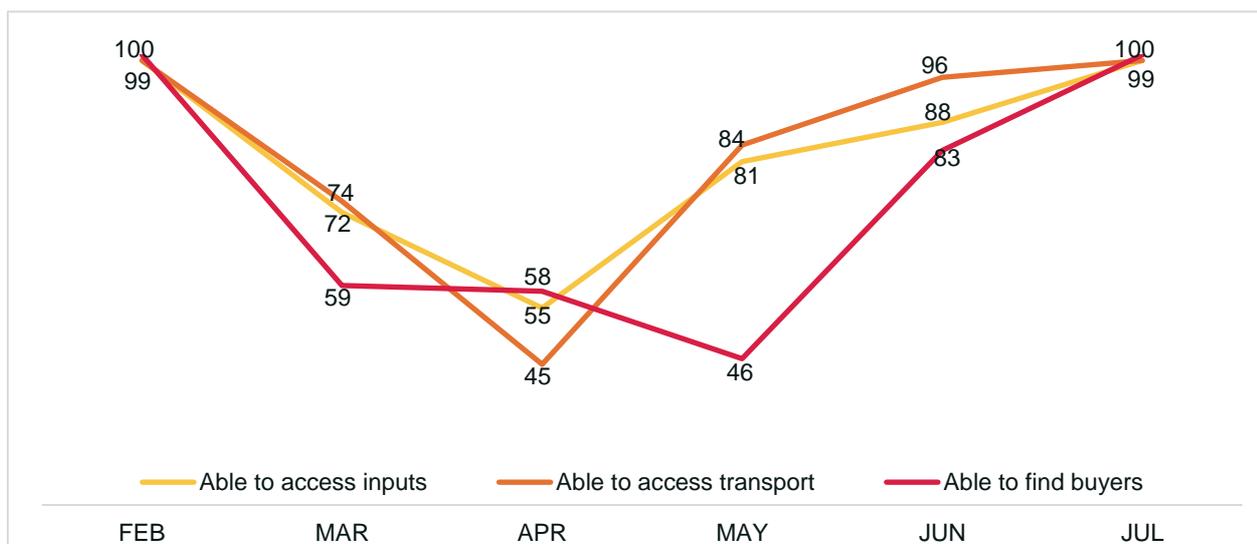
The share of respondents attempting to buy inputs fell from 67% to 54% between February and March, slowly climbing and remaining stable between 75% and 79% from May onwards, suggesting the demand for inputs recovered and remained stable after the COVID-19 related 'holiday' measures were lifted. In contrast, the percentage of respondents attempting to sell products climbed from 45% in February to 76% in April, dropping slightly in May, before rising again and remaining stable in June and July at around 77% (Figure 1).

Figure 1: Respondents attempting to buy or sell inputs, by month (%)



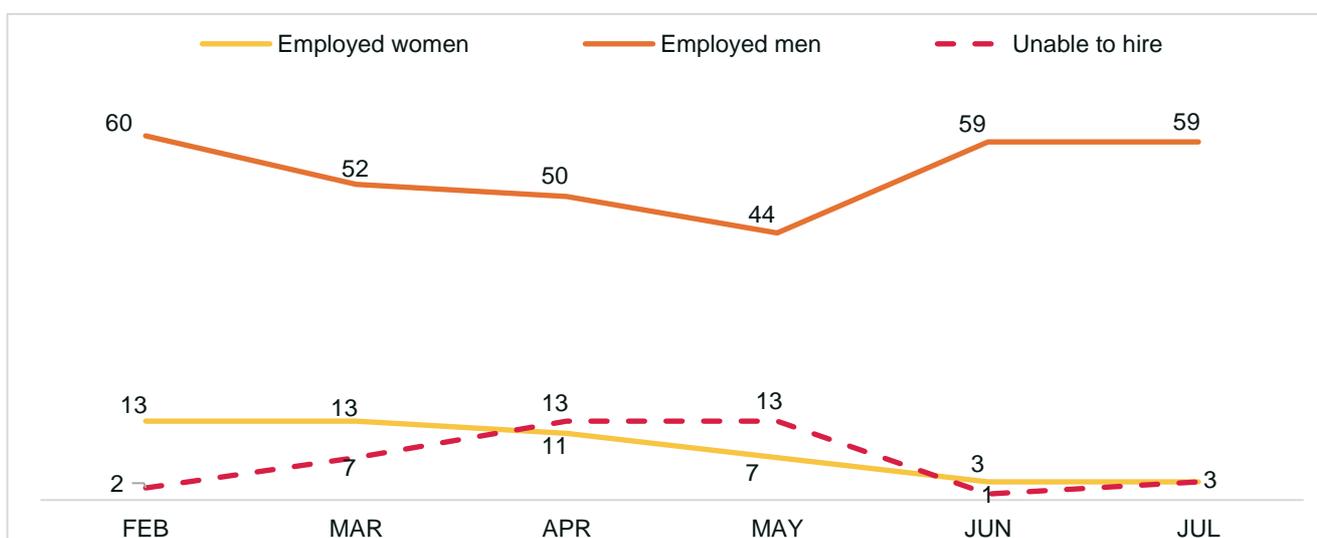
Access to inputs and transport followed a pronounced 'V shaped' curve (Figure 2). The percentage of respondents able to access inputs and transport dropped from 99% to 55% and 45%, respectively, between February and April but rebounded again to 100% in July. The share of respondents able to find buyers recovered more slowly, following a 'U shaped' curve, dropping from 100% in February to 46% in May but climbing again to close to 100% by July. These declines suggest a slowing of input supply during COVID-19 'holiday' measures enforced between March and May, and as well as a lagged slowing of demand, as expected.

Figure 2. Respondents able to access inputs, transportation or buyers, by month (%)



The number of businesses employing male casual workers declined from 60% to 44% between February and May, before recovering to 59% in June and July. In contrast, the share of respondents employing female casual workers remained stable in February and March, standing at 13%, before declining thereafter to 3% in June and July, suggesting differential impacts of COVID-19 on access to paid work for men and women (Figure 3). The percentage of respondents that reported being unable to hire labour was initially low, but climbed from 2% to 13% between February and May, before falling to 1% in June, suggesting that restrictions on movement and fear of infection may have impacted businesses' ability to employ workers from March to May, as well as workers' ability to find employment.

Figure 3. Respondents employing women or men casual workers, or unable to hire casual workers, by month (%)



In May, we began asking respondents whether they had experienced delays in accessing inputs or selling products, and whether they had reduced the quantity of inputs used or experienced any reduction in the quantity of products sold, as compared with their usual expectations. 20% and 32% of respondents, respectively, reported that they had experienced delays in accessing inputs and reduced the quantity of inputs used in May. These numbers gradually fell to 1% and 10% by July. The share of respondents experiencing delays in selling products or selling less products than usual followed a similar pattern, falling from 30% and 56% in May respectively, to 9% in July, suggesting increasing demand that mirrors the trends in Figure 1 and 2.

From May onwards, we asked respondents whether they had sufficient income to pay for their family's weekly expenses, and how the quantity of food purchased by the household during the past month compared to usual. The percentage of respondents that reported earning a sufficient income increased from 52% in May to 71% in July. Following a similar pattern, 49% of respondents purchased less food than usual in May, which steadily fell to 28% by July. This suggests that respondent's food security was negatively impacted during the COVID-19 lockdown, but these effects lessened in June and July.

From May onwards, we also asked respondents whether during the past month they had received any form of assistance, and whether they had travelled more than one mile from home (as an indicator of the severity of movement restrictions). 9% of respondents received assistance in May, with the government reported as the main source in 89% of cases. A similar pattern was reported in June, with only 4% of respondents receiving assistance in July, all from government sources. Fishers were the main recipients of aid. The share of respondents travelling more than one mile remained stable and increased from 68% in May to 84% in July, reflecting the lifting of movement restrictions from May.

Hatcheries

70% of surveyed hatcheries did not operate in February, citing the off-season for seed production as the main cause. From March onwards all surveyed hatcheries were operational, with the exception of April where one business suspended operations for reasons related to COVID-19, inability to hire transport, transport restrictions and low demand. The average number of days hatcheries operated per month increased from 9 days in February to 27 in March and remained stable between 23 and 29 days until July.

Total hatchling production in surveyed businesses remained stable between March (998 kg) and May (1067 kg) before dropping sharply to 468 kg and 375 kg in June and July. Catla and rohu and accounted for most of the hatchlings produced between February and July. Following the same trend, the total quantity of hatchlings sold fell from 698kg in May to 290kg in July. Both fry and fingerling sales were greatest in the month of May. Fry sales increased from 500kg in March to 875kg in May before quickly dropping to 160kg in July, while fingerling sales followed an ever more pronounced climb, rising from 47kg in April to 1180kg in May before plummeting to 270kg in June and remaining relatively stable in July. This pattern reflects the seasonality of production, with carp seed being produced and stocked primarily during the early monsoon season.

Feed Mills

All surveyed feed mills were operational between February to July, while the average number of days feed mill businesses operated fell slightly from 26 days in February and to 23 in July. Feed ingredient prices remained quite stable throughout this six-month period. Prices of rice bran – one of the main raw materials used to manufacture feed – remained stable throughout this period, at around BDT 19,000/t. Fish meal procurement prices declined slightly over the period from BDT 126,000/t to BDT 120,000/t. Prices for maize, soy meal and mustard oilcake also changed little.

The total quantity of raw materials purchased by feed mills climbed from 665 t to 3718 t between February and April, before sharply falling in May to 1440 t, rising gradually to 1970 t in July. The total quantity of feed manufactured by surveyed feed mills followed a very similar trend, climbing from February to April, plummeting in May, rebounding in June where the greatest amount of feed was manufactured, but falling again in July.

In May we began asking respondents about the quantity of feed sold in the past month. Consistent with the quantity of feed manufactured, there was a steep rise in the quantity of feed sold from 1438 t in May to 8780 t in June, shrinking slightly to 7474 t in July. The average reported sales value increased from BDT 38,307/ t to BDT 44,829/t between May and June, remaining stable in July.

Feed Sellers

We surveyed two sets of feed trading businesses; pelleted feed sellers, and non-pelleted feed sellers. Non-pelleted feeds sold include maize, rice bran and mustard oil cake. Pelleted feed sellers sell floating and sinking feeds.

Almost all pelleted feed sellers surveyed were operating between February and July, one feed seller was not operational between February and June, citing the inability to obtain credit to purchase inputs as the main cause in most months, along with other COVID-19 related reasons in March and April. In contrast, 50% of non-pelleted feed sellers suspended operations in March and April, citing logistical problems, the high market prices, and input suppliers being out of stock or closed as the main causes, all indicative of COVID-19 related impacts. 100% of non-pelleted feed sellers operated in February and between May and July.

The procurement price for non-pelleted feed and pelleted feeds remained quite stable between May and July, at approximately BDT 30,000 and BDT 42,000/t respectively. (We did not capture information on feed procurement for February-April). The total quantity of non-pelleted feed procured fell from 42 t in May to 26 t in June and climbed slightly in July. The quantity of feed procured by pelleted feed sellers followed a similar same pattern, falling from 585 t in May to 478 t in June, before climbing again by 89 t in July.

Sales of non-pelleted feed dropped from 81 t in February to 14 t in April, rising to 27 t in May and remaining stable thereafter. In contrast, pelleted feed sales gradually increased from 376 t and 614 t between February and May before dropping by 150 t in June and the climbing

to 562 t in July. Mustard oil cake was the main non-pelleted feed ingredient procured and sold the average sales price of non-pelleted feed trended slightly upward between February and May, where the average price rose by 24% to around BDT 34,000/t, before falling back slightly in June and July. The average sales price of most categories of pelleted feed also remained fairly stable over this period.

Farmers

Almost all surveyed farmers were operational between February and July, with only 8-12% suspending operations during to the 'off-season' between February and April. The share of farms reporting procuring inputs increased gradually from 71 t to 139 t between February and May in line with rising temperatures, but dropped sharply in June (-52t), before rebounding to 131 t in July. The total quantity of fish seed procured from farmers spiked between March and April (the main month for stocking), rising from 0.48 million to 5.3 million, falling back in May to 0.08 million and edging up to 0.86 million in July.

Total sales of fish by surveyed farms climbed from just over 30 t in February and March to around 50 t in April and May, falling 11t in June before rebounding to 35 t in July. Average farmgate prices received remained fairly consistent between February and April at approximately BDT 120/kg before increasing to approximately BDT 150/kg in May-July (an increase of around 25%). Indian major carp, most importantly rohu, and tilapia accounted for the bulk of fish sold by surveyed farmers. Surveyed farmers sold no shrimp in March and April, and very little in May. The total quantity sold varied from approximately 0.5 t to 1.5 t in other months.

Fishers

Most surveyed fishers fished in natural inland water bodies (e.g. beel) and rivers. More than half (58%) fished with boats. Boats averaging 11m in length and most had engines, averaging 24 hp in size.

46% of fishers did not operate in February, with most citing 'out of season' as the reason for suspending operations. The share of fishers not operating increased to 79% in March, falling slightly to 54% and April, with most respondents citing the closed fishing season as the reason for not fishing in these months. From May and July, approximately 70-80% of fishers fished. Those who did not operate cited the closed fishing season, temporarily pausing operations due to COVID-19 and 'other' reasons. Following a similar pattern, the average number of days fishers fished per month dropped from 11 in February and 2 in March before rising gradually back to 9 days in July.

By far the highest landings of any month were reported in February, with a total of 17.3 t landed. Nearly all of this catch (17.2 t) was sold. Total catch fell sharply in March to 0.22 t, reflecting in part the low number of fishers who continued operating. The total quantity of fish landed trended gradually upward after March, climbing from 0.92 t in April to 3.43 t in July. The quantity of fish sold followed a very similar pattern, as did fisher incomes.

Most fishers consumed part of their catch in all months, with the quantity consumed per household ranging from 3.5 kg/month to 6.75 kg/month. The share of total catch consumed was lowest in February (when landings were highest), at 0.9%, and highest in March (38%) when catches were lowest, dropping to 12% in April/May and falling further thereafter. However, the average quantities consumed per household were highest in February and lowest in March. This suggests that the quantity of fish consumed is positively correlated with the quantity harvested, but that households consumed more catch in relative terms in months when it was most difficult to sell, or when other sources of income were not available (March to May).

Fish Processors

Surveyed fish processors were all involved in drying fish. Although fishing and drying activities are closely linked, the share of fish processors operating follows a different trend to that described for fishers above, because the fish driers surveyed mainly processes marine fish during the dry season, whereas surveyed fishers mainly fish for freshwater fish. All fish driers were operating in February, yet this number quickly fell steadily from March onwards. Businesses stopping operations in April and May cited a range of reasons linked to COVID-19, including restrictions on road transport, inability to hire transport services, inability to access credit, and low demand.

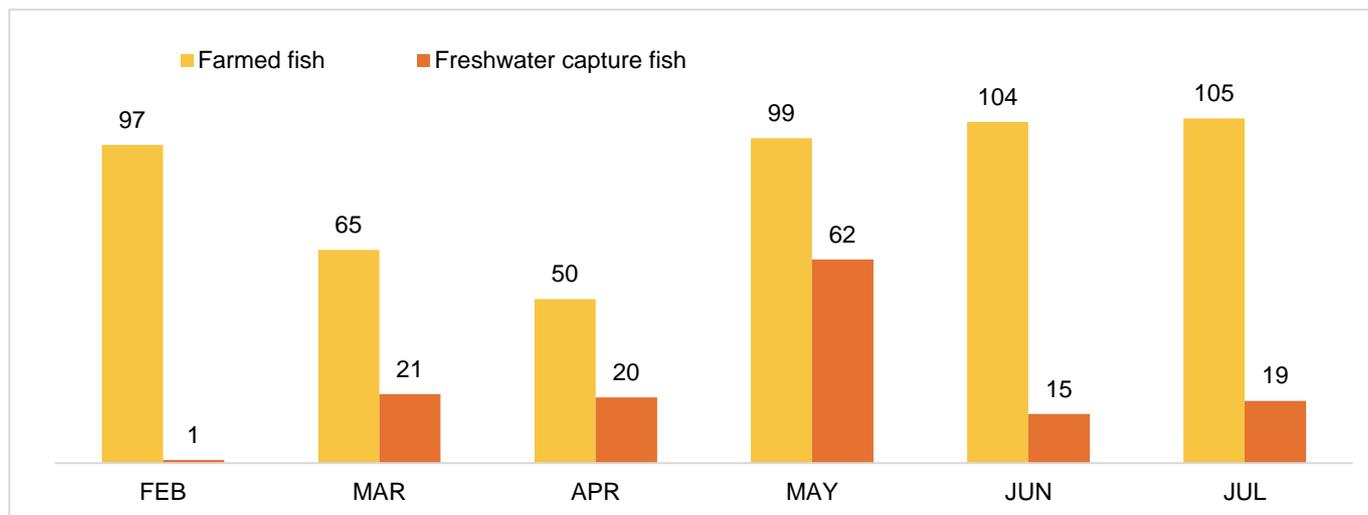
All fish driers ceased operations in June and July, citing the closed fishing season and bad weather during the monsoon as the main reasons for halting operations. The number of operating days followed a similar trend, down from 29 per month in February to zero in June/July. Accordingly, the total quantity of fresh fish dried by surveyed fish processors dropped gradually from 36.7 t in February to 3 t in May, while the quantity of dried product fell from 13.7 t to 1.3 t in the same period.

Traders

Almost all surveyed fish traders were operating between February and July, with the exception of two traders who suspended operations in March and April due to the closed fishing season, restrictions on road transport, input suppliers not operating, and temporary cessation of activities due to COVID-19. The average number of trading days per month for operational businesses dropped from 29 in February to 20 in April, before climbing again to 30 in May and remaining at a similar level thereafter.

The total quantity and value of farmed fish, marine fish and shrimp sold by surveyed traders all dropped between February and April. Farmed fish sales fell from 97 t in February to 50 t in April, before recovering to 99 t in May and remaining at a similar level thereafter (Figure 3). Marine fish sales dropped from 10 t to 1.9 t between February and April but rose slightly to 4.9 t in July. Following a similar yet more pronounced pattern, shrimp sales halved between February and April (from 8 t to 4 t), rebounding to 13 t in May and remaining at a similar level thereafter. In contrast, the total amount of freshwater fish sold by surveyed traders sharply increased from a low of 1 t in February to a peak of 62 t in May, shrinking again to 19 t in July.

Figure 3: Total quantity (t) of farmed fish and freshwater capture fish sold by traders, by month



Retailers

The majority of surveyed fish retailers continued operating between February and July. 18% suspended operations in March and April citing temporary closure linked to COVID-19 and transport restrictions as the main causes. The average number of days fish retailers operated followed a similar pattern and fell between February and April (25 days to 18 days) as an increasing number of retailers halting operations, before increasing to 30 days and 25 days in May and July, respectively.

The total quantity of farmed fish sold by surveyed retailers remained quite steady over the survey period, at 11-14 t, with sales at the lower end of this distribution occurring in March and April. Rohu, tilapia and catla contributed the majority of sales of farmed fish in all months. The average sales value of farmed fish also remained quite steady, fluctuating between roughly BDT 130 and 160 per month over this period. In contrast, freshwater fish sales were stable in February and March at 7 t, before sharply dropping to 0.34 t in April, and did not recover by July. The total quantity of shrimp sold by surveyed traders trended steadily downward between February and July, dropping from 2.6 t and 0.1 t. Little marine fish was sold by surveyed retailers.

Recommendations

- Support supply chain actors during the fishing closed season through access to social-protection programs such as food and/or cash for work.
- Explore and evaluate ways of integrating fresh and dried fish into safety net packages to deliver nutritious foods to vulnerable consumers and create demand for aquatic food products to support producers and other supply chain actors.
- Provide financial support and access to affordable credit for supply chain actors who have lost substantial amounts of revenue.

- Women's ability to find work in fish supply chains during the survey period has been more severely impacted than men's employment. Further research is needed to understand and address the reasons for this trend.
- Ensure that fish farmers are aware of the benefits from the production of fast-growing fish such as some of the Small Indigenous fish Species (SIS) e.g. Mola, or Genetically Improved Farmed Tilapia (GIFT). Shorter production cycles can increase turnover and cashflow and help ensure fish are consistently available for sale and consumption.
- Conduct research on how COVID-19 may transfer through fish market practices and ways to mitigate this and promote safe working practices for markets and logistics services.
- Continue to safeguard the ability to access transportation, movement of merchandise, and connections between supply chain actors to ensure essential supplies are transported.



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About FISH

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