RESEARCH PROGRAM ON Fish

Led by WorldFish

November 2020

Impacts of COVID-19 on Aquatic Food Supply Chains in Assam, India

February – July 2020

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Citation

This publication should be cited as: Jaqueline Shieh, Suresh Rajendran, Neeta Beypi, Kalpajit Gogoi, Begum Rehena Parvin, Rupan Pegu, Saadiah Ghazali, Goutam Dhar, Ben Belton. Impacts of COVID-19 on Aquatic Food Supply Chains in Assam, India February – July 2020. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Program Report

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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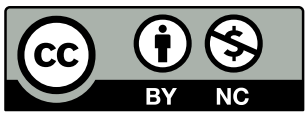

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Front cover, Gunajit Talukdar.

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1. Overview

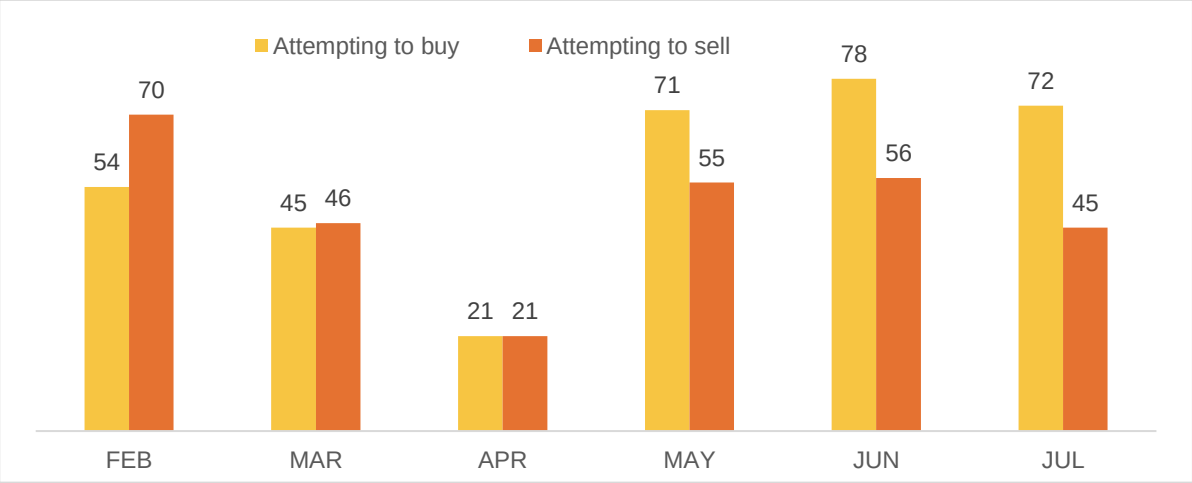
We conducted a monthly phone survey with fish supply chain actors in Assam to assess impacts of COVID-19 on the availability and price of aquatic foods and production inputs. Respondents answered questions about their activity between the months of February and July 2020. The sample totalled 108 respondents, comprised of the following: feed mills (5), feed sellers (14), fish hatcheries (11), fish farmers (26), fishers (25), fish traders (10), processors (5), and retailers (11).

The areas covered included Lower Assam (32%), Upper Assam (29%), Barak Valley (15%), Hills and Central Assam (15%) and North Assam (8%). Districts with the most respondents were Kamrup Rural (9%), Nagaon (8%), Cachar (8%), Jorhat (8%), Morigaon (7%), Nalbari (7%), Lakhimpur (7%), Sonitpur (6%), Majuli (6%), Goalpara (5%) and Guwahati (Kamrup Metro) (5%). A complete overview of survey results can be accessed here.

2. Key Findings

Between February and April 2020 there were steep declines in the share of respondents attempting to buy inputs or sell products due to COVID-19. The share of respondents trying to buy inputs went down from 54% to 21% between February and April, while the share of businesses attempting to sell products fell even more sharply, from 70% to 21% (Figure 1). The share of respondents attempting to buy inputs recovered in May, jumping to 71%, and remained above this level in June and July. However, the share of businesses attempting to sell products grew more slowly, to around 55% in May and June, before declining slightly to 45% in July, suggesting that demand remained sluggish

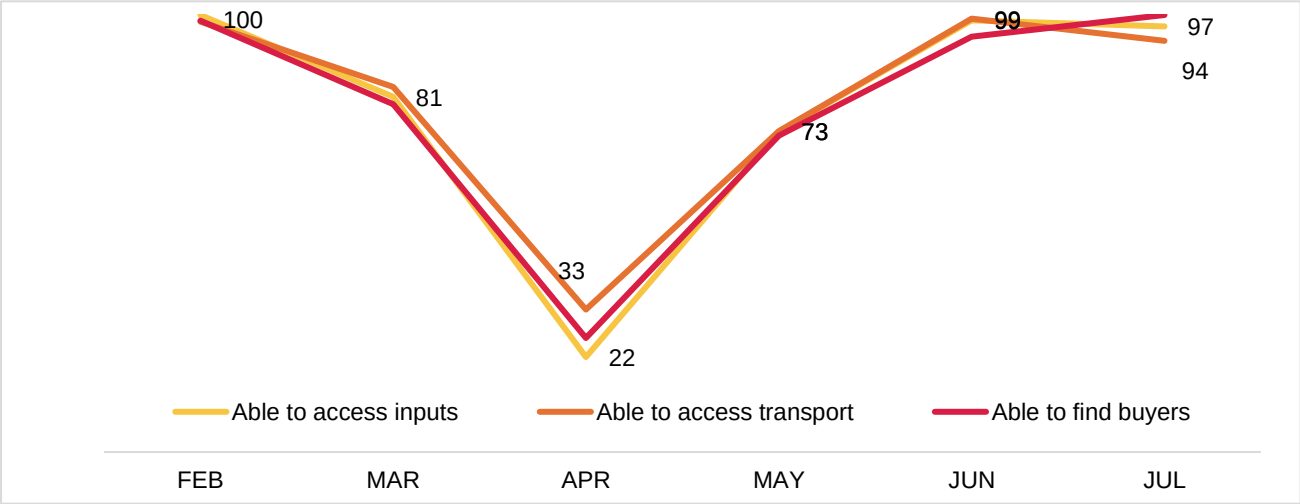
Figure 1. Respondents attempting to buy or sell inputs, by month (%)



Among respondents who attempted to buy or sell products, the share of respondents who were able to access inputs, transport, or buyers followed a similar, but even more pronounced 'V shaped' pattern (Figure 2). The percentage of respondents able to access inputs plunged from 100% in February to 22% in April, but rose again quickly to 99% in

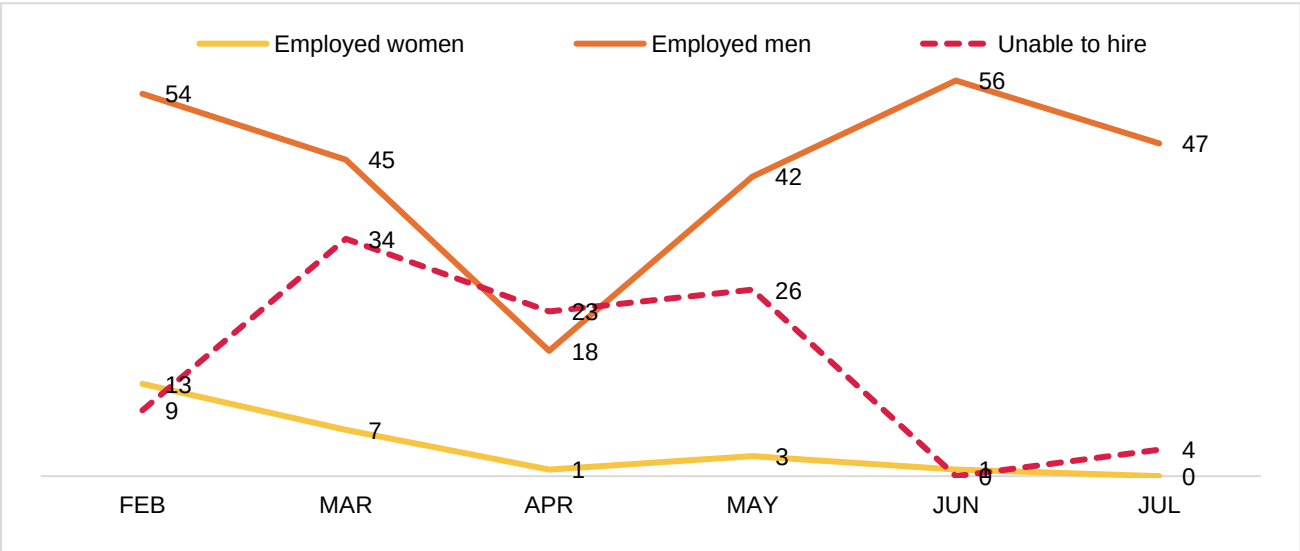
June, and remained close to this level in July. Respondents' ability to access transport and find buyers followed a similar trend.

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



Employment also followed a somewhat similar pattern. The percentage of respondents employing male casual workers dropped from 54% in February to 18% in April, rising back to 56% in June before declining again to 45% in July. In contrast, the share of respondents employing women daily laborers fell from 13% in February to 1% in April and remained around this level until July, suggesting differential impacts of COVID-19 on women's and men's access to paid work (Figure 3). Between one-quarter and one-third of respondents were unable to hire casual workers during the months of March, April and May, suggesting that movement restrictions impacted both businesses' ability to find workers, and 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, or if they had reduced the quantity of inputs used or experienced a reduction in the quantity of products sold, as compared with their usual expectations. 69% and 56% of respondents, respectively, reported that they had experienced delays in accessing inputs or used fewer inputs than usual in May. This number fell to around 6% in June and remained at a similar level in July, suggesting improved input access and availability, consistent with the trends in Figure 1 and 2. A similar pattern was reported by respondents regarding delayed sales and reduced sales volumes, though the share of respondents reporting difficulties increased slightly between June and July from ~5% to ~15%, indicating slowing demand.

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. Both these indicators improved from May to June and remained unchanged in July. The percentage of respondents with sufficient weekly income grew from 51% to 62% over this period. 41% of respondents reported purchasing less food than usual in May, suggesting that the COVID-19 crisis negatively affected respondent's food security, but these effects lessened somewhat in June and July, when they were reported by 28% of respondents.

From May onward, we asked respondents whether they had travelled more than one mile from home during the past month (an indicator of the severity of any movement restrictions). 100% of respondents travelled more than one mile from their homes in May and June, falling to 95% in July, suggesting that 'lockdown' measures were not affecting their movement during these months.

We also asked whether respondents had received any form of assistance and, if so, the source of the assistance, from May onward. 14% of respondents received assistance in May, with government reported as the source in 93% of cases, but only 1-2% received any assistance in June and July. Fishers accounted for the majority of respondents who received assistance. Few farmers and almost no actors in other segments of the value chain reported receiving any support during the period.

Hatcheries

Seasonality played a major role in determining the timing of hatchery operations. No hatcheries operated in February and very few (7%) opened in March. The number of operational hatcheries increased gradually to 64% percent in April, and to 91% in July. Hatcheries that closed between April and June did so for reasons related to COVID-19, including inability to access inputs or transport. By July, all closures were due to hatcheries having adequate stock to sell, perhaps suggesting that demand was low. The average number of hatchery operating days per month followed a similar temporal trend, rising from zero in February to 16 in July. This may suggest that full production capacity was not reached.

In February and March, none of the surveyed hatcheries produced or sold hatchlings. Hatchling production increased sharply from April (when surveyed respondents produced 156 million hatchlings), to May (520 million hatchlings), before falling to 238 million in July.

Indian major carps (rohu and mirgal) accounted for the bulk of hatchlings produced by hatcheries in the sample.

Feed Mills

Surveyed feed mills went from being fully operational in February and March, to completely inoperational in April. The number of operating mills increased gradually in May (60%) and June (80%), and all were operational again by July. The average number of days that mills operated by each month followed a similar pattern, dropping from 29 days in February to zero in April, before climbing to 14 days in May and 26 in July. Closures related to COVID-19, were the most commonly cited causes for pausing operations in April and May. These reasons included input suppliers being out of stock, reduced rail and road transport preventing movement of inputs, and inability to hire transportation.

Raw material prices increased gradually over the survey period. Between February and March, the average procurement price of raw materials increased from INR 14,927/t to INR 19,407/t (+30%). Procurement prices remained stable in May, before climbing slightly in July to INR 22,036/t (a further 14% increase over May prices). The quantity of raw materials procured by mills fell from 259 t in February to zero in April as mills closed, before surging to 448 t in May, following the easing of lockdown measures. Reported procurement fell to zero again in June, before climbing to 220 t the following month.

The price of feed sold by surveyed mills increased from February to July, likely reflecting rising input prices. The average sales value per tonne of feed was INR 23,237 in February. Prices remained relatively steady in March and May, but climbed to INR 28,000/t in June before falling back slightly to INR 26,500 (14% higher than in February).

The total amount of feed manufactured by surveyed mills fell from 173 t/month in February to 64 t/month in May and July, a 63% decline, suggesting that millers anticipated a substantial reduction in demand for formulated feeds. In May we began asking respondents about the quantity of feed sold in the past month. Sales for May stood at 52 t, dropping sharply to 12 t in June, before rebounding to 64 t in July.

Feed Sellers

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

Almost all non-pelleted feed sellers operated in all months, apart from April when 100% stopped operations. Reasons reported for pausing business operations were all related to COVID-19 in some way, and included restrictions on movement by road, out of stock input suppliers, low demand, and inability to hire transport. A similar pattern of business closures and operations was reported by respondents selling pelleted feed, but with 20% remaining shut in March and May.

The procurement price for non-pelleted feed ingredients remained relatively stable between May and July at around INR 22,500/t. Low quantities of non-pelleted feed ingredients were procured in May and June, but levels of procurement rose considerably in July, jumping nearly five-fold from 88 t to 508 t. The main non-pelleted feed ingredient procured and sold was mustard oilcake.

The average sales price of non-pelleted feed ingredients was fairly consistent over the period February-July, although, trending slightly upward from May-July, during which time average price rose 17%. After halting completely in April, non-pelleted feed ingredient sales rebounded to 238 t (approximately double the volume of sales in February and March), before dropping to just 44 t in June, and then shooting back up to 344 t in July.

The amount of pelleted feed sold by surveyed businesses reached its highest point in March (220 t). It declined sharply to 65 t in April, when only one seller remained operational. Sales did not recover to pre-lockdown levels following April, remaining at around 100 t in May and July. No sales were reported in June, despite business remaining open. This pattern mirrors a downturn in sales by feed mills and non-pelleted feed ingredient sellers in June.

Farmers

Unlike other actors surveyed, all farmers remained operational from February to July. The share of farms reporting difficulties in procuring inputs dwindled from 35% in February to 15% in April. There was a peak in input purchases in May (reported by 60% of farms), but the share of farmers who reported buying inputs subsequently declined to 24% in June, and then fell further to just 4% in July.

The main feeds purchased were mustard oilcake, rice bran and sinking feed. Average feed prices remained steady at around INR 22,000/t from February to June but climbed to INR 28,571/t in July. May was the peak month for procuring fish seed, when 40% of farms reported buying. The vast majority of fish seed purchases by surveyed farms were made at this time.

The peak period of fish sales by surveyed farms was in May (17 t), and June (6 t), up from only 3 t in February and 1 t in April. No fish sales were reported in March or July. Farmgate prices of fish remained fairly stable from February to June at around INR 240/kg, though dipping slightly to INR 220/kg in May, when sales were highest. Indian or Chinese major carps accounted for all the fish reported as sold during the period.

Fishers

76% of surveyed fishers were operating in February, but none of them went for fishing in March and April due to the inability to hire transport (20%), temporary suspension of activities linked to COVID-19 (22%), restrictions on transport preventing movement (22%) and seasonality/fishing ban (19%). Between May and July, no fishers went for fishing due

to the seasonal fishing ban. As a result, no sales were recorded between March and July, while fishers sold a total 0.69 tons of fish in February.

Processors

The activities of fish processors (who are mainly involved in drying fish) are linked closely to those of fishers. Accordingly, nearly all surveyed processors stopped operating in March and April. Reasons for doing so included COVID-19 (13%), raw material prices being too high (25%), the fishing ban (25%), and seasonality (25%). From May to July, all processors stopped operating completely, due the enforcement of the annual fishing ban. A 42% decrease in the quantity of fish processed/sold and a 46% decrease in revenues was reported between February and March.

Traders

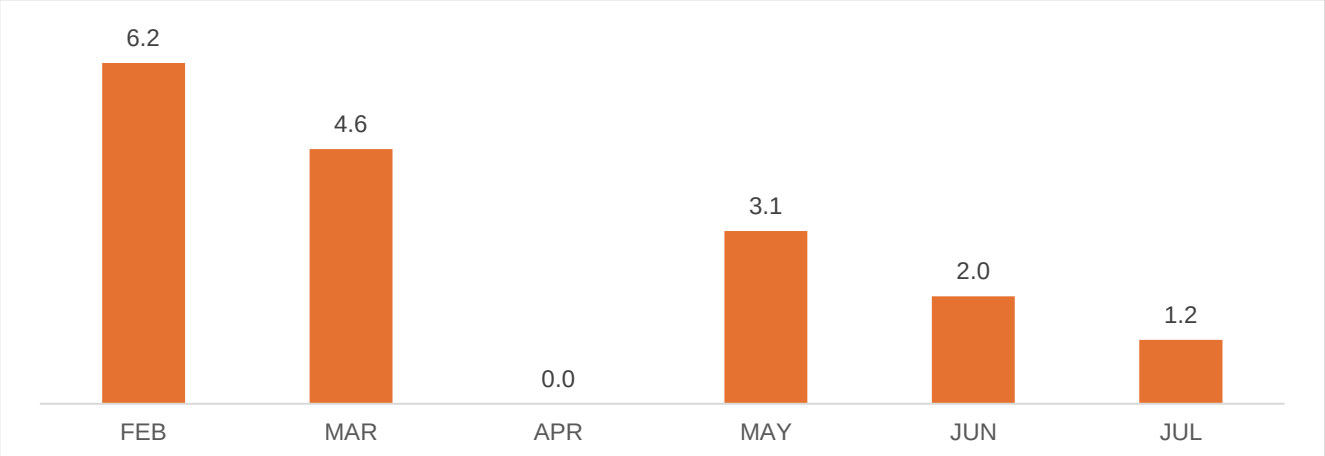
All fish traders were operating in February and March, but temporarily suspended operations in April for reasons related to COVID-19, including restrictions on road transport and inability to hire transport. By June, 70% of traders were operating again, but this number fell to 30% in July. The average number of business operating days for traders also remained low from May and July, at around seven days per month, down from an average of 28 days in February. The main cause of trading business closures reported in June and July were 'other' unspecified reasons, but likely reflected the impacts of the seasonal fishing ban.

Farmed fish were traded throughout the entire survey period, except in April when all businesses closed, but no respondents reported trading marine or freshwater capture fish or shrimp from April onwards. Farmed fish dominated total sales, accounting for 85% in February (356 t). Sales of freshwater capture fish and shrimp stood at around 30 t each in February, with marine capture fish sales amounting to just 1.5 t.

The quantity of fish sold dropped sharply from February to March, irrespective of source. Sales of farmed fish and freshwater capture fish declined by around 43% while shrimp and marine capture fish sales fell by 20% and 25%, respectively. Although trade in farmed fish resumed in May and June, it was at a much lower level than previously (just 6 t in May, and 14 t in June).

Average prices of farmed fish and freshwater capture fish both declined by around 10% between February and March (from INR 170/kg to INR 148/kg) and (from INR 178/kg to INR 160/kg), respectively. Rohu was hit particularly hard with a 40% decrease (from INR 174/kg to 104/kg). As a result of the drop in sales and prices, traders' income from farmed and freshwater fish fell by approximately 50% in March with income from rohu falling by 84%. The average sale price of farmed fish subsequently climbed by approximately 50% in May and June to around INR 223/kg, likely reflecting constrained supply.

Figure 4. Total quantity (t) of farmed fish sold by retailers, by month



Retailers

The operation of fish retail businesses followed a similar pattern to that of fish traders. All retailers operated in February and March but stopped operating in April. 79% temporarily suspended their activity due to COVID-19, while related transport and movement restrictions accounted for the other closures. Most retailers began operating again in May and June, but only 18% remained operational in July. Reasons for business closures in July related to restrictions on movement, access to transport and closure of suppliers, while about one-third of respondents cited 'other' unspecified reasons.

The average number of days in which operational businesses traded followed a similar pattern, falling from 28 days/month in February to zero in April, rising again to 19 days in June and then falling again to 4 days/month in July.

All operational retailers sold farmed fish in all months except April. Shrimp, and freshwater capture fish were only traded in February and March. The average price of farmed fish sold remained quite constant at around INR 300 from February to July. However, the total quantity of farmed fish traded by retailers each month declined steadily, from 6.2 t in February to 1.2 t in July, except in April, when no sales were recorded (Figure 4). As a result, total monthly retailer revenues fell by 83%, from INR 635,500 in February to INR 105,000 in July. There was no income recorded in April. Rohu, catla and mrigal contributed most sales of farmed fish in all months.

3. Recommendations

- During the COVID-19 pandemic the government has supported uninterrupted transport and inter-state and intra-state movement of critical inputs for fisheries and aquaculture such as fish seed and feed and raw materials, as well as the movement of fish for sale to the markets. However, in practice there were restrictions for transport. Hence there is need to safeguard access to transportation and movement of merchandise.
- Keeping markets open safely is key to safeguarding demand and keeping the supply chain functioning adequately. Though the Government of Assam has taken all steps to

support the marketing of fish to meet the demand, consumer access was restricted and there is need to explore other avenues like direct procurement and marketing through hygienic market outlets and online marketing

- As most stakeholders in the fish value chain were affected by the pandemic, there is an urgent need to provide financial support to actors of supply chain who have lost substantial amounts of revenue during these testing times.
- 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.
- Most hatcheries faced difficulties in seed marketing but lacked sufficient space to retain and nurse surplus seed. This means that there may be inadequate quantities of seed available for sale when demand picks up again. Support may be required to help overcome seed shortages and ensure that demand for seed can be met.
- Feed is becoming a major input for aquaculture production and the fish feed supply chain including the raw material supply, feed distribution needs to be strengthened so that shortages do not affect the overall fish production. Establishing more decentralized small-scale feed mills and encouraging production of farm made feeds could help to improve this situation.
- The livelihoods of fishers depending on the inland capture fishery were very severely impacted due to the effects of the COVID 19 pandemic, followed immediately by the fishing ban, and there is a special need to extend welfare support to these vulnerable communities dependent on capture fisheries.
- Making institutional credit more widely available for stakeholders involved in fisheries and aquaculture could provide vital support during current circumstances, while insurance programmes could help buffer against future shocks.

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About FISH

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