RESEARCH PROGRAM ON Fish
Led by WorldFish

November 2020

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

February – July 2020

Lucinda Middleton, A.B.C Mohan, Ravi Babu, Jaqueline Shieh, Saadiah Ghazali, Goutam Dhar, Ben Belton

Citation
This publication should be cited as: Lucinda Middleton, A.B.C Mohan, Ravi Babu, Jaqueline Shieh, Saadiah Ghazali, Goutam Dhar, Ben Belton. Impacts of COVID-19 on Aquatic Food Suppy Chains in Andhra Pradesh, 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.

Contact
WorldFish Communications and Marketing Department, Jalan Batu Maung, Batu Maung, 11960 Bayan Lepas, Penang, Malaysia. Email: fish@cgiar.org

Photo credits
Front cover, Seafood Solutions

Table of contents

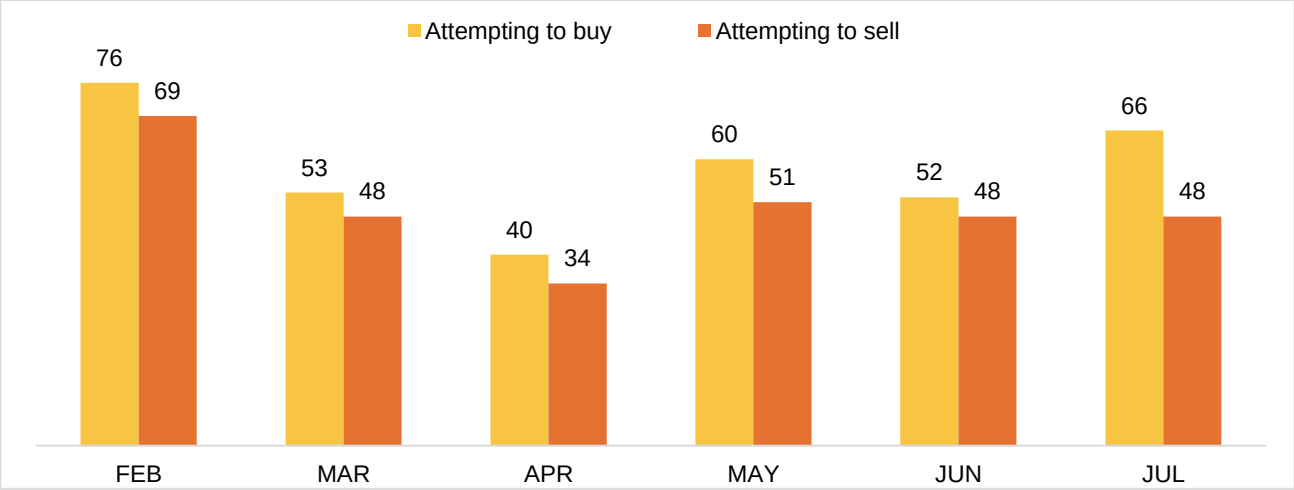
Overview

We conducted a monthly phone survey with fish supply chain actors in Andhra Pradesh 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 137 respondents, comprised of the following: feed mills (1), feed sellers (18), fish hatcheries (10), fish and shrimp farmers (51), fishers (18), traders (21) and retailers (9). The areas covered included the districts of Nellore (32%), West Godavari (32%), Guntur (14%), Krishna (9%), Prakasam (9%) and East Godavari (4%). A complete overview of survey results can be accessed here.

Key findings

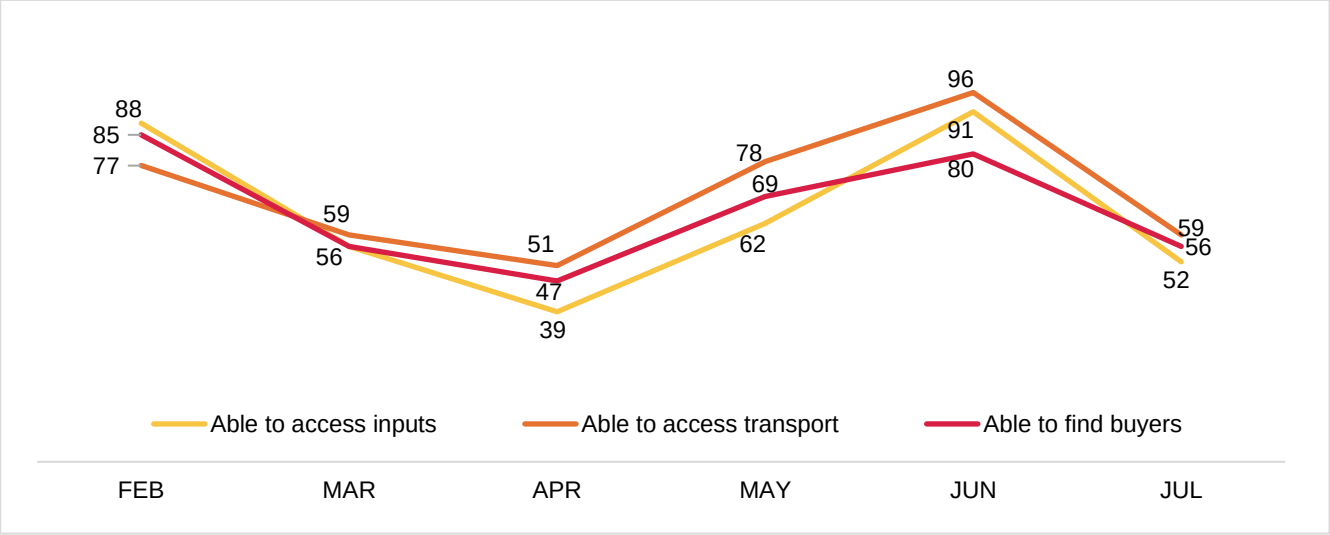
Between February and April there were steep declines in the share of respondents attempting to buy inputs and sell products, likely caused by COVID-19. The share of respondents attempting to buy inputs dropped from 76% to 40% between February and April, while the share attempting to sell products followed the same pattern and dropped from 69% to 34%, in the same period (Figure 1). The share of respondents attempting to buy inputs climbed to 60% in May before dropping slightly in June and rebounding to 66% in July. In contrast, those attempting to sell products, climbed to 51% in May, and remained stable in June and July at 48%, suggesting that demand remained quite sluggish compared to the pre-pandemic period.

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



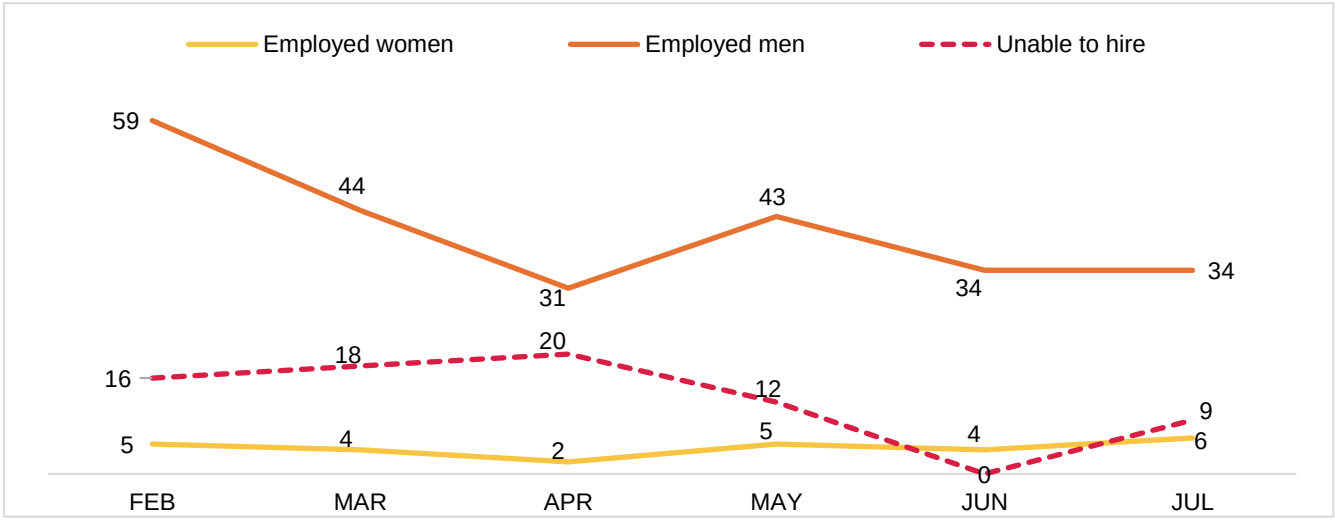
The share of respondents able to access inputs, transport and find buyers followed a 'V shaped' curve between February and June, before falling again in July (Figure 2). The percentage of respondents able to access inputs fell from 88% to 39% between February and April while the share able to find buyers dropped from 85% and 47%. The share of respondents able to access transport followed a similar but not as pronounced pattern, falling from 77% to 51% in the same period. Access to transport, inputs, and buyers all rebounded by June, reaching to 96%, 91%, and 80% respectively, reflecting the easing of the national lockdown from June 8th, which prompting enterprises to work hard to recover for lost business. Unfortunately, the recovery was not sustained in July, when the share of respondents able to access to transport, inputs and buyers fell again to between 59% and 52%.

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



The share of businesses employing male casual workers sharply trended downward between February and April, from 59% to 31%, before climbing in May to 43%, falling again and remining stable in June and July at 34% (Figure 3). In contrast, employment of female casual workers remained relatively stable, but low, over the survey period, dropping from 5% to 2% between February and April before recovering in May and remaining stable. These results suggest that COVID-19 negatively impacted access to paid work for male workers in aquatic food supply chains, while women's access to paid work is consistently lower than that of men. The share of respondents unable to hire labour for their business peaked at 20% in April, before falling to zero in June, increasing again in July, suggesting that the impacts of COVID-19 negatively 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 purchased or products sold as compared to their usual expectations. Results for all four indicators mirrored the trends reported above, improving significantly from May to June, before worsening again in July. For example, the share of respondents experiencing delays accessing inputs dropped from 64% in May to 13%, but then increased again to 54% in July. Other indicators followed a similar pattern.

From May onwards, we asked respondents if they had sufficient income to pay for their household's weekly expenses, and how the quantity of purchased food in the past month compared to usual circumstances. The percentage of respondents with sufficient weekly income grew sharply from 38% to 77% between May and June, but fell back somewhat in July to 69%. Following a similar trend, 64% of respondents purchased the same amount of food as usual in May, increasing to 83% in June, before slightly falling in July, suggesting that the negative effects of COVID-19 on food security over this period lessened initially before intensifying slightly again.

From May onwards, we also asked respondents if they received any form of assistance and whether they had travelled for more than one mile from home during the past month (as an indicator of the severity of movement restrictions). Between 25% and 30% of respondents received assistance between May and July, citing government as the main source. The share of respondents travelling more than one mile from home remained stable around 84% during this period, reflecting the relaxation of lockdown measures.

Hatcheries

An increasing number of surveyed hatcheries stopped operations, rising from 10% in February to 90% in May, before falling slightly to 80% in June and dropping back to 10% in July. Respondents cited temporary suspension of operations due to COVID-19 and having sufficient stock as the main causes for suspending operations in this period. Accordingly, the average number of days hatcheries operated fell from 18 days to 2 days between February and May, before rising to 22 days in July.

No hatchlings were produced or sold by surveyed hatcheries over the survey period, which may have been due to limited shrimp brood stock availability. During this time, international flight restrictions hindered brood stock imports, and hatcheries were only able to produce shrimp with locally available brood.

Fish fry and fingerling sales by surveyed hatcheries trended upwards but remained modest in June and July (the only months sales were made). Total monthly fry sales climbed from 20,000 to 80,000 in this period, while 20,000 fingerlings were sold in June, doubling to 40,000 by July.

Feed Mills

One feed mill was surveyed and operated between February and July, working on average 21 days over this period.

No raw materials were procured by the surveyed feed mill during this time period. The total quantity of feed manufactured trended downwards between February and April, falling

from 800 t to 372 t, where the average sales value remained stable at INR 76,000/t. The quantity manufacture quickly rebounded to 800 t in May and remained stable until July.

In May we began asking about the quantity of feed sold in the past months. 160 t of feed was sold in May, increasing to 720 t in June and July, consistent with the increase in seed production by hatcheries during the same period. The average sales value increased slightly, from INR 77,000/t in May to INR 83,000/t in July.

Feed Sellers

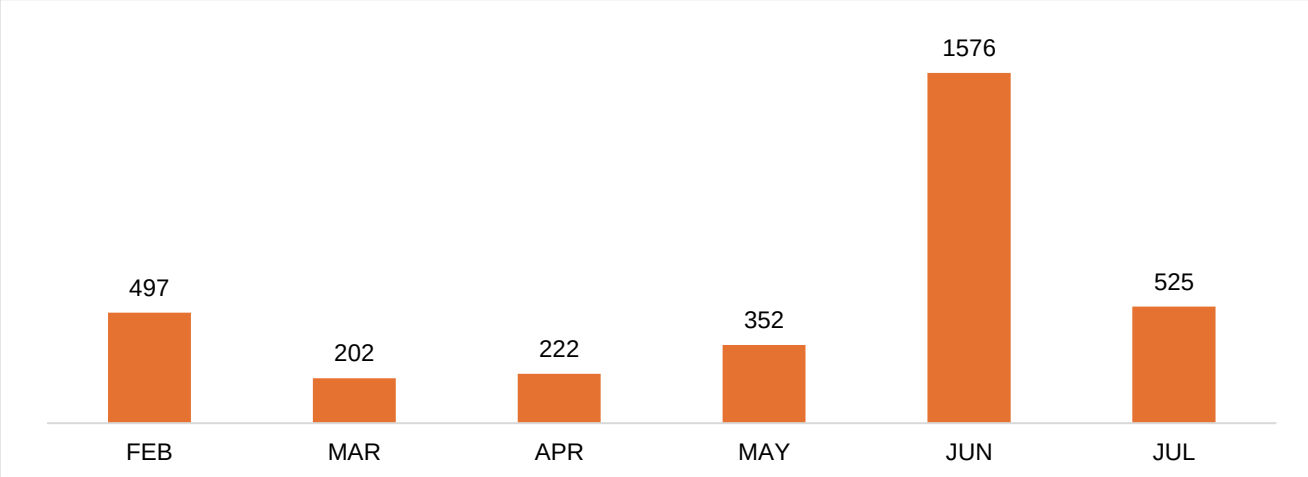
We surveyed two sets of feed trading businesses; pelleted feed sellers, and non-pelleted feed sellers. The main non-pelleted feeds sold included rice bran and peanut oil cake. The main feeds sold by pelleted feed sellers are shrimp feeds, followed by floating feeds and a smaller quantity of sinking pellets.

All pelleted feed sellers were operating in February, falling to 58% in March and April, with respondents citing COVID-19 as the main cause for suspending operations. 91% of surveyed pelleted feed sellers operated from May to July. Following a similar pattern, 100% of non-pelleted feed sellers were operating in February, falling to 67% in March and 50% in May, with respondents citing temporary suspension of business due to COVID-19 as the main cause for pausing operations. Around 80% of non-pelleted feed sellers were operating again in June and July.

The total quantity of feed procured by pelleted feed sellers sharply rose between May and June, from 635 t to 1685 t, before dropping back in July to similar levels to May. Following the same pattern, the total quantity of non-pelleted feed procured jumped from 24 t in May to 164 t in June, falling to 92 t by July.

The average sales price of pelleted feed climbed gradually but steadily between May and July from INR 63,305/t to INR 83,091/t (an increase of 31%). The average sales value of non-pelleted feeds followed a similar but less pronounced upward trend, rising gradually from INR 19,444/t to INR 24,133/t between February and July (up 24%).

Figure 4. Total quantity (t) of pelleted feed sold, by month



The total quantity of pelleted feed sold by surveyed businesses more than halved between February and April (falling from 497t to 222 t), recovering in May and trending sharply upwards until June to reach its highest point (1576 t), before falling to 525 t in July (Figure 4). The quantity of non-pelleted feed sold by surveyed businesses followed a very similar, but even more pronounced pattern. The amount sold dropped tenfold between February and April from 80 t to 8t, tending upwards and peaking to 157 t in June, before falling sharply again to 90 t in July; a pattern observed across the supply chain, and visible in Figure 1 and 2.

Farmers

Most farmers remained in operation between February and July. 18% were not operational in February which rose to 35% in April, with farmers citing the off season and COVID-19 among the main causes for suspending operations. Between 20% and 30% were not operating from May onwards, citing reasons linked to COVID-19 as the main causes for halting operations.

The main feeds purchased by surveyed farmers were sinking feed, floating feed, rice bran and oilcake. Average feed prices (all feeds combined) fluctuated over the survey period, and were lowest in April (INR 36,261/t) and highest in July (INR 53,600/t). July was the peak month for provision of feed. Purchases of feed fell between February and April from 227t to 150 t, before climbing steeply to 1875 t in July. July was also the peak month for the procurement of fish seed and shrimp post-larvae, with most seed was purchased between May and July.

The number of fish sold by surveyed farmers followed a similar trend, dropping from 74 t to 2.3 t between February and April, with no sales made in May, before jumping to 162 t in June, then dropping again in July; a pattern seen across multiple supply chain segments. Pacu and pangasius accounted for most of the fish sales made by surveyed farms between May and July, with some limited sales of rohu, mrigal and catla from February-April. While the sales fell between February and April, the average sales value rose from INR 121/t to INR 150/t.

The total quantity of shrimp sold by surveyed farmed fell from 10 t in February to almost nothing in March, before jumping from 9 t in April to 416 t in May and remaining stable in June. Following the same pattern as fish, shrimp sales dropped-off again in July to 192 t. The peak of shrimp sales occurred in June (420 t), while the average sales value was also highest during this month (INR 288/kg).

Fishers

Most surveyed fishers fished in the sea, most commonly in nearshore waters, but also offshore. Approximately one quarter of respondents fished inland in rivers. All fished with boats, averaging 8-9 meter in length. 89% of boats had engines, averaging 17HP in size.

Due to the closed fishing season, the share of fishers operating fell from 100% in February to 50%, 94% and 37% in March, April and May, respectively. 53% of fishers were not

operating in June and July, but cited reasons related to COVID-19 as the cause for suspending operations. Accordingly, the average number of days fishers operated per month, fell from 25 days in February to 1 day in April, and ranged from 13 to 8 days per month thereafter.

The quantity of fish landed and sold plunged between February and March and did not recover over the survey period. The quantity of fish landed by surveyed fishers dropped from 82 t to 1.5 t, while the quantity sold fell from 82 t to 1.5 t. No fish were landed or sold during the month of April. This decline may be attributed to a number of events, including seasonal closure of mechanized boat fishing from April 15 to May 31 on the east coast of India, COVID-19 lockdown restrictions and lack of access to ice, and the impact of Cyclone Amphan in May.

Over 80% of fishers consumed their own catch between February and June, falling to 60% in July. In February the average quantity of catch consumed by surveyed fishers each month was 6.9 kg, which gradually dropped to 2 kg in April. The amount consumed rose in accordance with the increase in fishing activity, ranging from approximately 7 kg to 10 kg per household between May and September.

Traders

An increasing number of surveyed fish traders halted operations over the survey period, rising from 14% in February to 44% in July, with respondents citing the off-season or closed season for fishing as the main cause in February, travel restrictions as the main cause in April and other reasons related to COVID-19 as the main cause for suspending operations in all other months. Accordingly, the average number of days fish traders operated dropped from 19 days in February to 8 days in July.

Farmed fish, freshwater capture fish and shrimp were traded throughout the entire survey period, while marine capture fish were not traded in June and July. The total quantity of farmed fish traded fluctuated, trending slightly upwards between February (358 t) and March (488 t), before sales plunged to 145 t in April. Peak sales occurred in May (568 t), before quickly falling to 36 t in July. The average sales value of farmed fish followed a similar pattern.

Shrimp sales followed a similar trend that occurred in many supply chain segments over the survey period. The total quantity of shrimp sold fell between February (349 t) and March (214 t), before steadily rising to 1367 t in June, quickly dropping again in July (388 t). The average sales value followed the same trend, peaking in June at INR 359/kg, up from around INR 200/kg in February-April.

Freshwater capture fish sales remained fairly stable around 2.5 t between February and April, before falling to about 0.5 t in May (-80%), with sales continuing to decline gradually thereafter. As the sales dropped between April and May, the average sales value increased and remained stable around INR 165/kg. In contrast, peak marine capture fish

sales occurred in May (20 t) after jumping from 0.09 t in April, with no sales reported in other months.

Retailers

Most fish retailers (88%) were operating in February. Numbers fell to 63% in March and 13% in April, before climbing to 50% in May and reaching 83% in June and July. All retailers who closed in February cited the closed fishing season. From March onwards, reasons related to COVID-19, including inability to hire transport services were the main reasons given for not operating. Accordingly, the average number of days operated by fish retailers each month dropped from 18 in February to a low of 2 in April, recovering to around 15 days in June and July.

The quantity of farmed fish sold by surveyed retailers trended downwards between February and July, falling from 1.2 t to 0.1 t, with no sales at all made in April and May. The average sales value trended upward over this period, rising from INR 97/kg to INR 155/kg. Catla accounted for the majority of farmed fish sales over the survey period.

No freshwater capture fish was sold from May onwards, and sales plummeted from 5.5 t in February to 0.29 t in March and continued to decline in April. This may be due to the location of most survey respondents in coastal areas, as most freshwater capture fish are marketed inland, in freshwater capture fishing areas. Following the same pattern as farmed fish, the sales value of freshwater capture fish rose over this period, from INR 101/kg to INR 180/kg.

Marine capture fish was sold in all months except April. Sales were highest in February at 28 t, falling to 8t in March, and remained low after April. Mixed small marine fish accounted for the majority of sales. In contrast, shrimp sales rose between February and March from 1.2 t to 4.7 t. No sales occurred in April and May, rising to 0.8 t in July.

Recommendations

- Provide financial support and facilitate access to credit for supply chain actors who have lost substantial amounts of revenue and are facing cash flow problems.
- Safeguard the ability to access transportation, movement of merchandise, and connections between supply chain actors.
- Conduct research on how COVID-19 may transfer through fish market practices and ways to mitigate this.
- Provide health and insurance coverage for fishers and aquaculture farmers working under COVID-19 health risks.
- Prepare a government emergency response plan for aquaculture and fisheries, including provision for cold storage facilties operated by government or under public-private parnetships.
- Raise awareness and provide traning on how to use digital channels to advertise and sell fish products and production inputs.

RESEARCH PROGRAM ON Fish

CGIAR

Led by WorldFish

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.

For more information, please visit fish.cgiar.org