



RESEARCH
PROGRAM ON
Fish
Led by WorldFish



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Impacts of COVID-19 on aquatic food supply chains in Nigeria

February – November 2020

Lucinda Middleton, Ajibola Olaniyi, Sunil Siriwardena, Leah Rosen, Saadiah Ghazali, Goutam Dhar and Ben Belton, Jacqueline Shieh, Bianca Haas

Authors

Lucinda Middleton, Ajibola Olaniyi, Sunil Siriwardena, Leah Rosen, Saadiah Ghazali, Goutam Dhar and Ben Belton, Jacqueline Shieh, Bianca Haas

Authors' Affiliations

¹ WorldFish

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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.

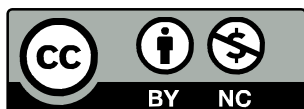
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Contact

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

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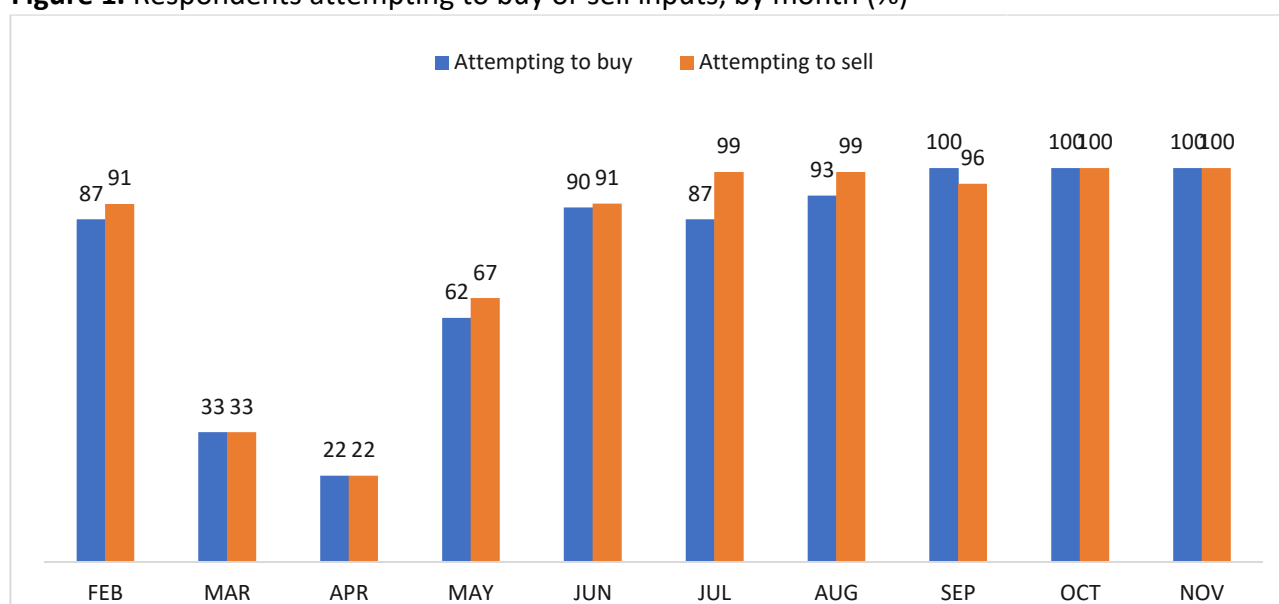
1. Overview

We conducted a bi-weekly phone survey with fish supply chain actors in Nigeria to assess impacts of COVID-19 on the availability and price of aquatic foods and production inputs. Respondents answered questions about their activity during the months of February and November 2020. The sample totaled 95 respondents, comprised of the following: feed mills (4), feed sellers (12), fish hatcheries (12), fish farmers (24), fishers (14), fish traders (8), processors (12) and retailers (9). The states covered included Oyo (31%), Lagos (20%), Ogun (20%), Ondo (16%) Kwara (6%) and Osun, Bayelsa, Delta, Imo and Nasarawa (6%). A complete overview of survey results can be accessed [here](#).

2. Key findings

The percentage of respondents attempting to buy inputs or sell products declined sharply between February and April. The share of respondents attempting to buy inputs fell from 87% in February to 22% in April, while those attempting to sell products fell from 91% to 22% in the same timeframe (Figure 1). The share of respondents attempting to buy inputs rose back to 87% in July and rose further to 100% in October and November. Whilst the share attempting to sell inputs jumped to 99% in July, and similar to those attempting to buy inputs, remained stable at around 100% between August and November, suggesting an increase in demand after COVID-19 lockdown measures were lifted at the end of April.

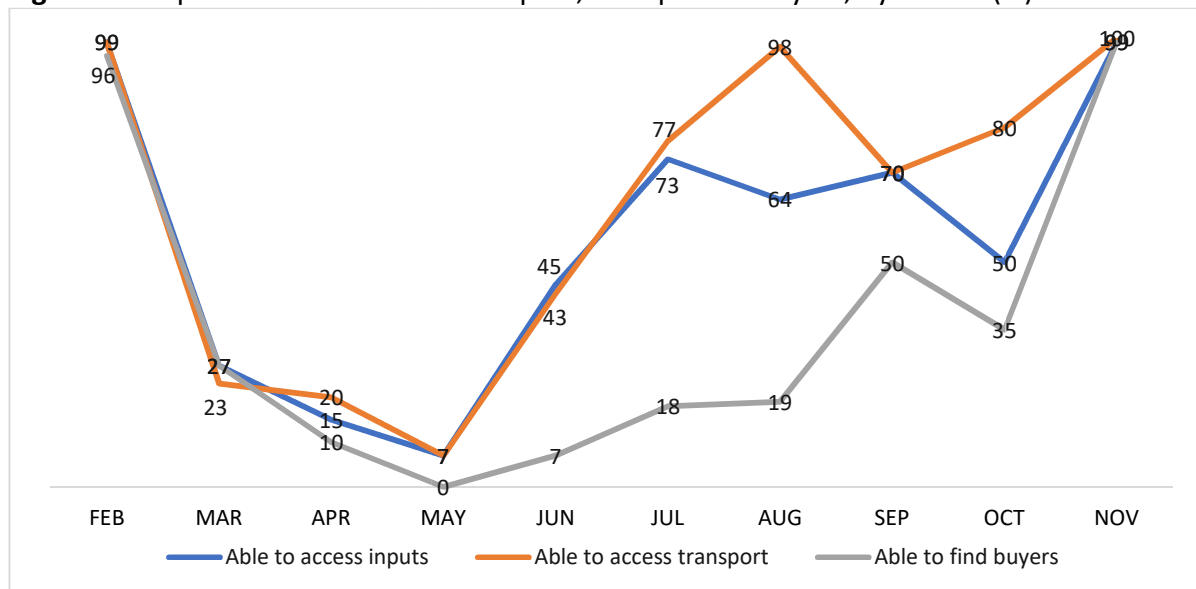
Figure 1. Respondents attempting to buy or sell inputs, by month (%)



The share of respondents able to access inputs and transport followed a pronounced 'U shaped' curve between February and July, before fluctuating between August and November (Figure 2). The share able to access transport and inputs dropped from 99% to 7% between February and May but recovered in the following two months, to reach 77% and 73% in July, respectively. The share able to access inputs fluctuated slightly, declining from 73% to 50% between July and October. However, all businesses were able to access inputs in November. The percentage of respondents able to access transport followed the same but more pronounced pattern, climbing from 77% to 98% between July and August, falling again in September before increasing to 80% in October and 100% in November. The percentage of respondents unable to find buyers for all the

products they expected to sell plummeted from 96% to 0% between February and May, but was much slower to recover than the share of respondents able to access transport/inputs, increasing slowly to 50% in September, and declining slightly to 35% in October, suggesting a major slowdown in demand. However, by November, all businesses were able to find buyers.

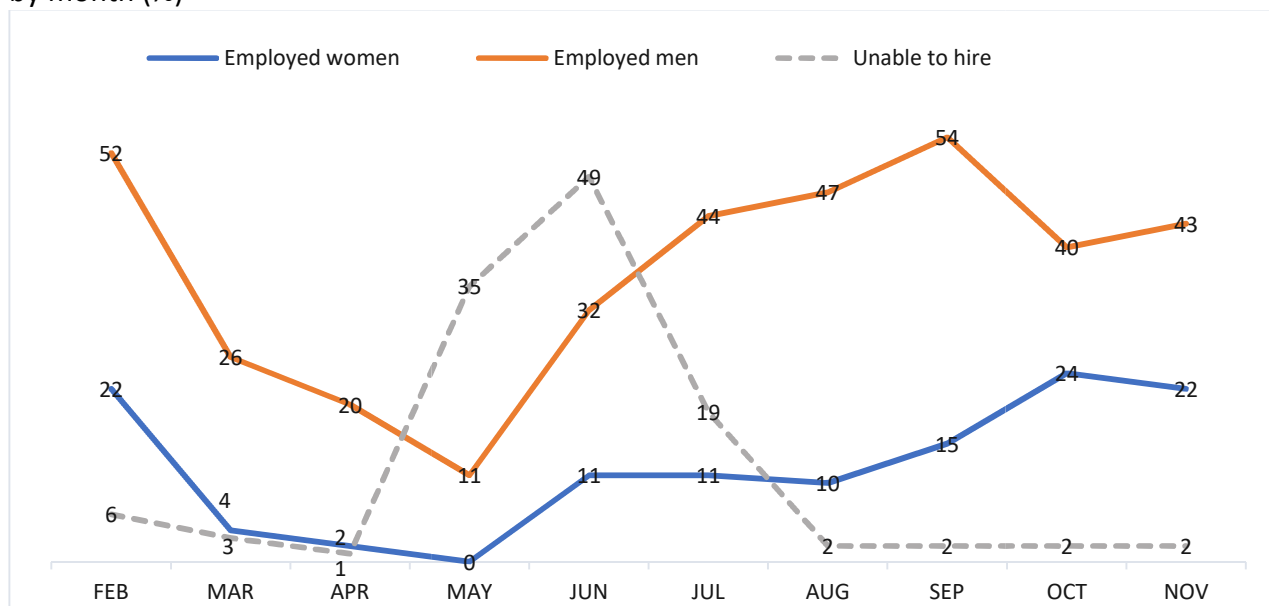
Figure 2. Respondents able to access inputs, transport or buyers, by month (%)



Employment of male casual workers dropped from 52% in February to 11% in May, but recovered gradually to 54% in September before falling again to 43% in November. In contrast, the share of respondents employing female casual workers fell from 22% in February to 0% in May, increasing and remaining stable to 11% in June and July before rising to 24% in October and falling back to February levels in November. This may suggest differentiated impacts of COVID-19 on access to paid work for men and women, with women’s access affected most severely during the months where restrictive measures were enforced (Figure 3).

The percentage of respondents reporting being unable to hire labor was initially low, but climbed from 1% in April to 49% in June suggesting the inability for businesses to hire labor due to travel bans and restrictions on movements, before falling to 19% in July after the lockdown measures were lifted and remained stable between August and November.

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 and selling products, and whether they experienced any reduction in the quantity of products sold as compared to usual expectations. 70% of respondents experienced delays in selling products in May, this number rose to over 90% in June and July and only marginally improved in August, dropping to 81%, and remained stable for the remainder of this period, suggesting slowing demand, similar to results presented above. Over 88% of respondents experienced delays in accessing inputs in May. The situation improved and fell to 40% in September before worsening and climbing to 65% in October, perhaps reflecting the travel restrictions put in place due to political instability. The share of respondents purchasing lower quantities of inputs than usual remained extremely high between May and November, at well over 90%, again tying into the picture of reduced demand being transmitted back along the supply chain from consumers to actors further upstream. The share of respondents reporting selling lower quantities of products than usual also remained close to 100% during this period, except for September when the situation improved, dropping to 83%, before rising back to 100% in October and November.

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. Almost all respondents (close to 95%) reported receiving insufficient weekly income to cover their living expenses between May and September, climbing to 100% in October and November. Consequently, the share of respondents purchasing less food than usual almost doubled between June (55%) and November (98%), the greatest share over the period, suggesting that the COVID-19 outbreak and restrictions along with political instability very negatively impacted respondents' food security.

From May onwards, we asked respondents if they received any form of assistance, and whether they had travelled more than one mile from home during the past month (as an indicator of the severity of movement restrictions). No respondents reported receiving any assistance in May, June, August and November, and just one respondent did so in July, citing friends and family as the source, suggesting that public assistance was not widely available. The share of respondents travelling more than one mile increased from 62% in May to 98% in July and remained stable until

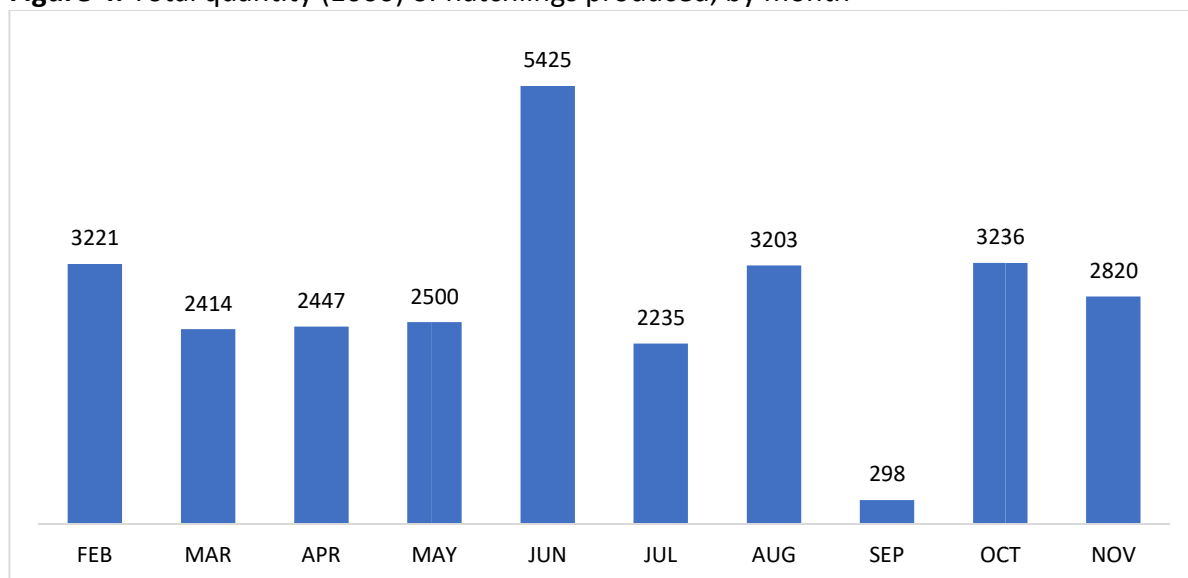
September, reflecting the relaxation of lockdown measures during this period, leading to increased movement after restrictions were lifted. The percentage travelling more than a mile quickly fell to 68% in October, perhaps due to restrictions put in place due to political instability, but recovered to 100% in November.

Hatcheries

Fifty percent of hatcheries ceased operations in March and April, down from 92% that were operational in February. Almost all hatcheries operated between May and November, with the exception of October when 33% halted operations, citing movement restrictions as the main cause. The number of days on which hatcheries operated roughly halved between February and April, from 24 to 12 days, recovering to around 24 days in June and remaining there in the following months. The main reasons for suspending operations were temporary closures related to COVID-19 (36%), restrictions on road transport preventing movement (21%) and low demand (14%). 100% of hatcheries operated in May and June, falling slightly in July to 92%.

Total hatchling production in surveyed hatcheries fell by 25% between February and March (down from 3.2 million to 2.4 million) and remained stable until a surge in June (5.4 million) before falling in July to a similar level as previous months. Production climbed in August to 3.2 million, plummeting in September to the lowest level over the survey period, before rebounding to 3.2 million in October and 2.8 million in November (Figure 4).

Figure 4. Total quantity (1000) of hatchlings produced, by month



Fingerling sales followed a 'U shaped' curve and dropped from 6.3 million to 30,000 between February and May, to quickly climb to 8 million in August. Sales plummeted again in September by 84% (from 819 t to 133 t), before bouncing back and soaring to 1274 t in November (+90% from September). Clarias catfish and tilapia accounted for most of the hatchlings produced and sold.

Feed mills

100% of surveyed feed mills operated in February, falling to 75% and 50% in March and April, respectively, mainly due to restrictions on road transport preventing movement (33%) and reduction of production due to low demand (33%). All mills were fully operational between May and November, except for October when 43% suspended operations, citing restrictions on road

networks. The average number of days operated per month fell from 23 in February to 9 in April, rebounding to around 20 days in the months thereafter.

The average procurement price of raw material remained relatively stable between February and May, but gradually increased thereafter, rising from NGN 107,971/t in February to NGN 269,583/t in July, before dropping and remaining at around NGN 217,915/t in the following months, driven mainly by increase in the price of maize and soy meal. The quantity of raw materials procured by feed mills declined sharply, from a high of 3012 t in February, to just 60 t in July, and after a slight increase to 94 t in August remained stable from September to November.

In contrast, the total amount of feed manufactured by surveyed feed mills peaked in March and April, at around 1400 t/month. Between May and August production remained low, shrinking to just 78 t in July, before trending upward in August, reaching 400 t in November. In May we began asking respondents about the quantity of feed sold in the past month. Consistent with the pattern of procurement and manufacturing, feed sales were also low and falling from 125 t in May to 46 t in July. Sales fluctuated between August and November, climbing to 81 t in August, dropping to 50 t in September, jumping to from 29 t in October back to 54 t in November. The average sales value followed a similar pattern, initially falling between May and August from NGN 444,000/t to NGN 3011,975/t and remained stable thereafter.

Feed sellers

Businesses selling floating and sinking pelleted feeds were the only feed sellers surveyed in Nigeria. An increasing number of pelleted feed sellers stopped operating in March (75%, up from 8% in February) and 100% of surveyed sellers ceased operation in April. Business closures during March and April were mainly due to temporary COVID-19 related suspensions (41%) and restrictions on road transport preventing movement (41%). One-third of pelleted feed sellers remained closed in May. Of those not operating, 80% cited pausing operations due to COVID-19 as the major cause. All feed sellers were operating again between June and November, though 37% halted operations in October (similar to other supply chain actors), citing restrictions on road transport as the main cause. The average number of days pelleted feed sellers operated followed a similar 'U shaped' pattern between February and July, dropping from 20 days in February to zero in April before rising 8 days in May and 23 days in July and remaining stable until November.

Feed sales halted completely in April as a result of business closures, after a 34% increase between February and March, from 469 t to 627 t. The quantity sold remained low after April, scarcely increasing in the following months, with 21 t sold in November. The sales price of feed remained fairly steady throughout this period, increasing by around 6% in June/July compared to other months, but quickly fell in September to the same level as February and remaining stable thereafter. The main pelleted feed purchased and sold was 37-45% protein floating fish feed.

Farmers

All surveyed farms were operational in February. An increasing number temporarily stopped operations in March (25%) and April (29%). Reasons for doing so included low demand (38%), temporary COVID-19 related suspensions (31%) and restrictions on road transport preventing movement (31%). Farmers were fully operational in other months, except for October when 32% suspended operations in due to restrictions on road networks, following a similar trend to other supply chain actors.

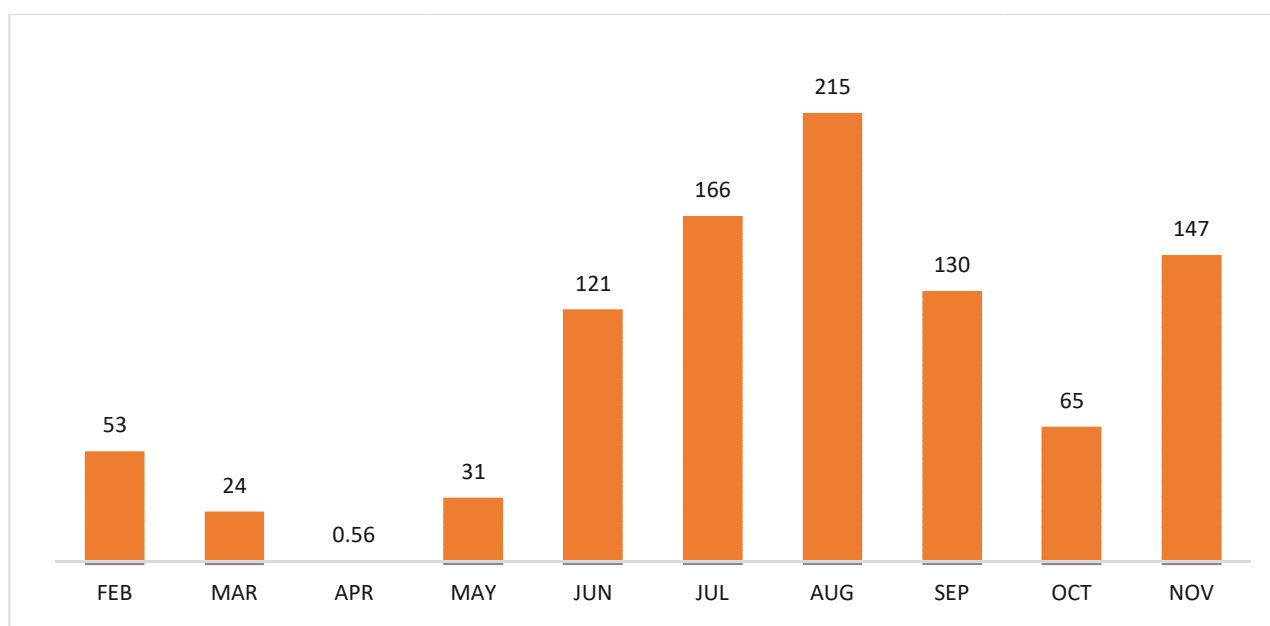
The share of farmers procuring inputs fell sharply from 83% in February to 29% in April, before climbing to 91% in June, falling back to 70% in July, before climbing to 100% in September and remaining at this level in the months following. The share of farms selling fish followed an even more pronounced 'V shaped' pattern, dropping from 79% in February to 6% in April, before climbing steadily to 100% in July and remained stable thereafter.

The quantity of feed procured by surveyed farmers was low between February and June, fluctuating between 2 t and 17 t. Between July and November, input procurement experienced drastic fluctuations, jumping more than ten times from June to July, to reach 111 t, in line with seasonal increases in farming activity that take place around this time. The quantity procured between August and October followed the same pattern as hatchling production, falling from 281 t in August to 59 t in September, peaking in October at 254t, before plummeting back to 55 t in November.

Floating feed was the main feed purchased between February and November. Surveyed farmers did not purchase fish seed from hatcheries between March and June, but a total of 119,000 and 111,000 fingerlings were purchased in February and July, respectively. Following the same trend as feed inputs, the quantity of fish seed purchased by farmers increased in August to 321,000, fluctuating thereafter.

Sales of fish followed a 'U shaped' trend between February and July. Total fish sales by surveyed farms fell from 53 t in February to almost nothing in April, before rebounding to exceed February levels in July (166 t) and August (215 t). The declines in sales between February and April caused income for surveyed farmers to drop by 98% in the same period. Following the same pattern as inputs, sales dropped to 130 t in September and to 65 t in October, before climbing again in November (147 t), a trend seen across supply chains (Figure 5). Fish farmgate prices remained relatively stable around NGN 600/kg, though dropping slightly to NGN 447/kg in May, gradually climbing each month thereafter, peaking at NGN 772/kg in October before dipping somewhat to NGN 672/kg in November. Catfish accounted for the bulk of fish sales.

Figure 5. Total quantity (t) of fish sold by farmers, by month.



Fishers

Most surveyed fishers fished in inland waterbodies or rivers. Most fished with boats (79%), averaging 3 meters in length. Three-quarters of boats had engines, averaging 28Hp in size.

27% of fishers did not operate in February, mainly due to seasonal reasons. The share of fishers who did not go fishing increased to 45% in March and April, due to temporary suspension of operations linked to COVID-19 (around 40%) and restrictions on road transport preventing movement (around 35%). All fishers operated in May and 92% fished in June but an increasing number of fishers halted operations from July onwards, with bad weather cited as the main cause in all months, with the exception of October, where transport restrictions were the main causes. By November, all fishers resumed operations. The average number of days per month fished ranged from 11-15 between February and June but fell to 9 days in September, before jumping to 16 days in November.

In April, fishers landed a total of 0.17 t of fish and sold 0.15 t, a decline of 19% and 16%, respectively, compared to March, resulting in a 26% drop in income. There was a substantial increase in catch in May (1.76 t), rising further to 3.08 t in June, of which 2.89 t was sold, before dropping somewhat in July to 2.49 t. Sales trended upward from August onward and, the quantity of fish landed and sold rose to 3.2 t in September and 4 t in November.

An increasing share of fishers stopped consuming their own catch between July (9%) and November (47%), whereas all fishers consumed part of their own catch between February to June. From February to April when catches were low, consumption was limited to between 1 and 1.7 kg per household per month. The quantity of fish consumed by fishing households each month jumped to 23 kg in May as catches rose, falling to around 17 kg in June and July. The average quantity of fish consumed per household declined gradually after September (17.6 t), falling to only 7 kg in November.

Processors

The activities of fish processors, all of whom were involved in smoking fish, are closely linked to those of fishers. Accordingly, over half of the surveyed processors stopped operating in March and April, citing COVID-19 (48%) and road and travel restrictions preventing movement (35%). By May, all processors were operational again and remained so until November. Although the quantity of processed fish sold by surveyed processors declined gradually between February (1.7 t) and April (0.2 t), sales began to recover between May and July with respondents selling almost twice as much in July (3.1 t) as they did in February (1.7 t). After trending downward from July to September, the quantity processed increased to around 2.2 t in October and November. Fish processors are known to sell their products in distant markets in other states, so an increase in transport costs may have impacted their ability to market their products.

Traders

Similar to other actors, an increasing number of fish traders suspended operations in March (33%) and April (50%), due to temporary closures due to COVID-19 (40%) and restrictions on road transport preventing movement (60%). Only two traders were not operating in May (25%), both due to suspending business temporarily because of COVID-19. By June 100% were fully operational and remained so for the following months.

Farmed fish were traded throughout the entire survey period, but no respondents reported trading marine fish, and only a small quantity of freshwater capture fish were traded in June (0.3 t). Catfish accounted for all the farmed fish sold by surveyed traders. The quantity of catfish sold was low between February and April, falling from 4.1 t to 1.0 t, but sales improved in May (22.7 t) and climbed further in July (40.2 t) after a drop in June. Sales remained relatively stable between July and November at around 40 t, despite a drop in October (22.5 t). The average wholesale price of fish was fairly steady from February to June, at between NGN 669-710/kg, but dropped by 10% as the quantity of fish sold fluctuated between May and July, before gradually rising to NGN 706/kg in November.

Retailers

Over three quarters of surveyed fish retailers suspended operation in March and April for reasons related to COVID-19 (42%), including road restrictions (28%). Over half were not operating in May citing reasons related to COVID-19, which fell to 25% in June. 100% of fish retailers resumed operations from July to September, before 31% suspended businesses activities in October due to transport restrictions. The average number of days fish retailers operated followed a similar pattern, falling from 21 days to 2 days between February and April, before rising consistently each month, to around 25 August and September with a small drop in October to 13 days, before rising again to 24 days in November.

Similar to fish traders, fish retailers did not sell any marine capture fish during the survey period. Freshwater capture fish were only sold from February to June, but the quantity sold remained stable but low (0.3t) between April and June, with peak sales occurring in March (0.05t).

Farmed fish were sold in all months, but sales plummeted by 99% in March and April (from 9.1 t to 0.02 t), before rising to 19.9 t in August, the greatest quantity sold over the survey period. Following the same trend as other actors, sales between August and October fluctuated heavily, falling to 4 t in October, and rising again to 8 t in November. As a result of the drop in sales at the beginning of the survey period, the average retail sales price per kilogram rose from NGN 792/kg in February to NGN 1200/kg in April (+51%), falling back in May, to same sales value as February, and continued to decline until August, reaching NGN 489/kg, consistent with an increase in fish supply, before rising again to NGN 806/kg in November. Fish retailer income also dropped by 99% between February and April (mirroring sales), with farmed fish sales contributing the largest loss of revenue. Catfish accounted for the bulk of farmed fish sales throughout the survey period.

3. Recommendations

- Safeguard the ability to access transportation and ensure movement of merchandise by designating fish and supplies of fish production inputs as 'essentials'.
- Keeping markets open and operating safely is key to safeguarding demand and keeping the supply chain functioning adequately.
- Raise awareness of ways to manage production and post-harvest activities in a COVID-19 safe manner.
- Provide financial support to supply chain actors who have lost substantial amounts of revenue to shore up cash flows and enable continued business activities.
- Establish programmes through the Bank of Agriculture to help actors in the fisheries and aquaculture sector to access loans at low interest rate to cushion the effects of the pandemic.

- Expand the 'Anchor Burrowers Programme' to accommodate more beneficiaries in the aquaculture value chain.
- Reorient fish marketing strategies to include delivery of products to shopping malls, supermarkets, hotels and recreational facilities.
- Establish a central fish wholesale market or develop market facilities at locations close to where fish farms are clustered to help farmers and buyers access competitive markets more easily.
- Raise awareness of how to use digital channels to advertise and deliver fish products.
- Scale up appropriate technologies and arrangements for delivery of live fish to mitigate losses and delays during fish harvesting and marketing.



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