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Impacts of COVID-19 on integrated fish farmers of Punjab: A case study

Abhed Pandey, Khushvir Singh and Sarbjeet Kaur

Abstract
The COVID-19 outbreak and the emergence of a new norm have rattled India's entrepreneurial sectors. This study looked at how the COVID-19 pandemic affects different integrated farming sector in the state of Punjab. From June to November 2020 and April to June 2022, we performed personal and telephonic conversations with 73 integrated fish farmers (same farmers were surveyed both the times) in 20 districts of Punjab. According to the results of the current study, Punjab farmers have experienced significant financial losses as a result of the COVID-19 pandemic. Based on the statistical analysis of the data gathered, it was determined that 25% of farmers overall no longer practice integrated farming for a variety of reasons. The primary reason for ceasing or abandoning the practice of integrated fish farming in the state of Punjab, however, was listed as loss throughout the COVID period. The study also shows that while none of the farmers ceased fish culture, several of them stopped using integrated farming. Therefore, in this study, we assess how integrated fish farming has been impacted by the COVID-19 pandemic in several districts of Punjab.

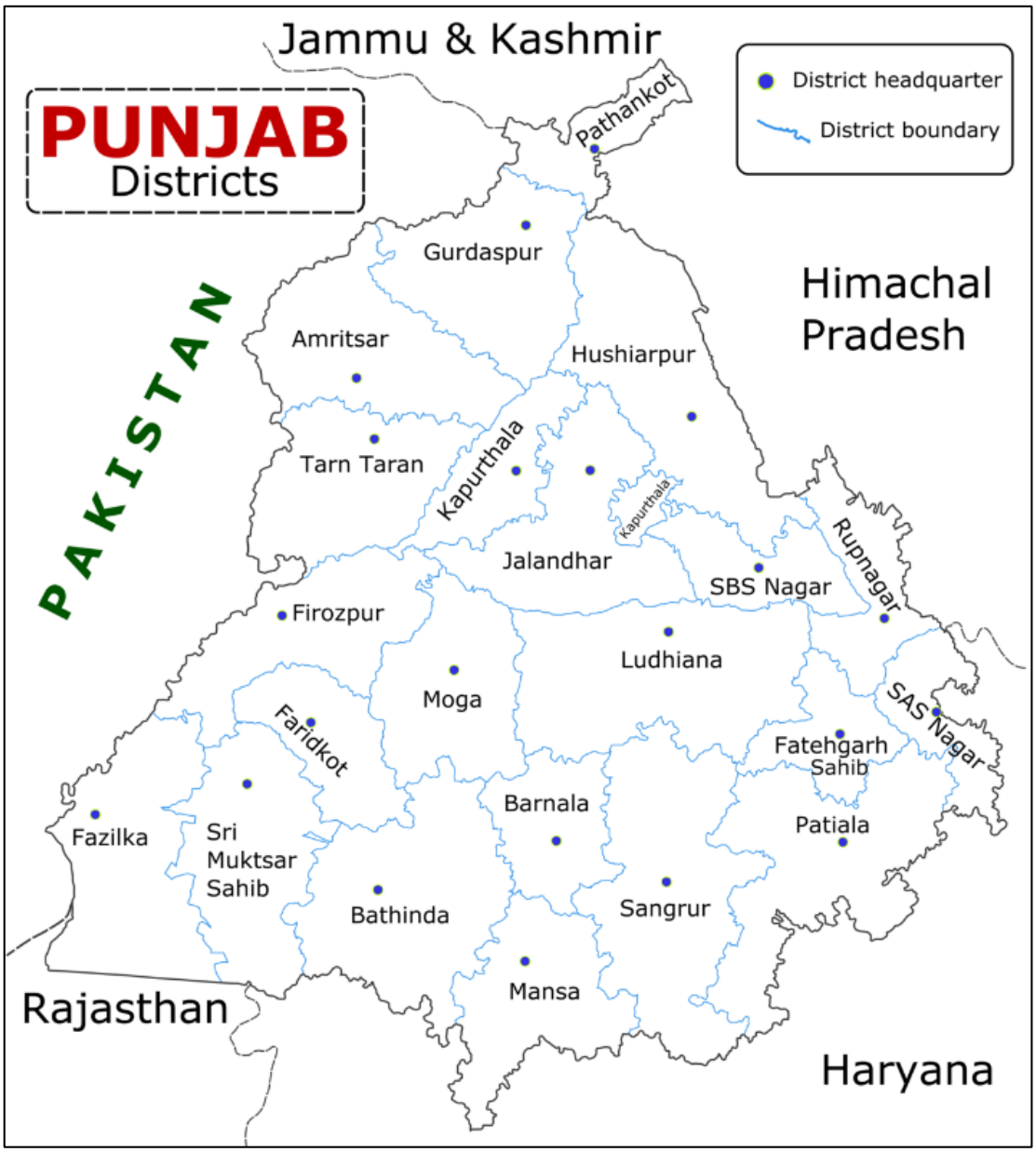
Keywords: COVID-19, lockdown, integrated fish farming, Punjab, district

1. Introduction
The novel-coronavirus is currently a global health threat and a public health emergency of international concern. Following its initial discovery in Wuhan, China, in December 2019, the World Health Organization assigned the severe acute respiratory syndrome Coronavirus (SARS-COV2) its specific designation, COVID-19 (WHO). Due to the COVID-19's rapid spread, by November 11th, 2020, there were more than 50 million cases reported in 213 different countries, regions, or territories, resulting in more than 1.2 million fatalities. In response to this acute and quickly deteriorating disease, the WHO on January 30th, 2020, declared COVID-19 a pandemic and a public health emergency of worldwide significance. To curb its spread, they asked all governments to take concerted action. Almost every country in the world now has the virus. On March 25th 2020, India launched a strict 21-day lockdown that was later extended to May 3rd and May 17th 2022. During the nationwide lockdown, public gatherings, intercity and interstate travel, and the use of all logistics and transportation services were severely restricted, with the exception of the movement of goods and services that are absolutely necessary. Schools, colleges, businesses, and public transportation were all closed. For instance, it is more challenging for farmers to access markets to sell their commodities, check distant fields, or obtain necessary inputs when there are constraints on people's movement (Laborde *et a*l., 2020) [12]. Due to border restrictions and quarantine processes, it was difficult for agricultural labourers to go to rural areas for seasonal employment (Rasul *et al*., 2021) [14]. Logistics for input and production are disturbed by transportation restrictions (Adhikari *et al*., 2021) [1]. Logistics problems may potentially lead to changes in planning schedules or greater transport or storage expenses (Amjath-Babu *et al*., 2020) [3]. The closing of trade boundaries can have a considerable impact on supply and demand, and consequently pricing (Kakoolaki *et al*., 2020) [10]. The demand for more expensive products is decreased by events and restaurant closures (Campbell *et al*., 2021) [5]. When jobs and income are lost, grocery shopping becomes increasingly difficult (Bene, 2020) [4]. Due to their decreased income, farmers now have a harder time paying off their loans or investing in productivity improvements (Rasul *et al*., 2021) [14]. The cumulative consequences of COVID-19 measures on food systems could seriously endanger livelihoods and food security if they are not properly managed. The inability of Indian manufacturers to physically gather inputs, transfer goods, and reach markets was a result of their lower levels of mobility (Kumaran *et al*., 2021) [11]. The study's main objective was to determine how COVID-19 affected integrated fish

farmers. In order to discuss potential coping mechanisms, special attention was paid to the operational processes of farming systems, the marketing supply chain, consumer attitudes, and the economic viability of farming in Punjab. Bringing these issues to light can help development experts and policy makers provide short, medium, and long-term support for farm producers as the COVID-19 outbreak develops in Punjab (India).

2. Materials and methods

2.1 Study areas



Source: https://en.m.wikipedia.org/wiki/File:Punjab_district_map.png

The purpose of the survey was to determine the economic effects that the local integrated farming sector would experience as a result of social seclusion, the closure of non-essential businesses, and movement restrictions brought on by the Indian government's declaration of a lockdown as well as other COVID-19-related restrictions. The survey was concentrated on various integrated fish farms located in 20 districts of Punjab. This study is based on primary data. A survey of 73 integrated fish famers (same farmers were surveyed both the time) was conducted in different villages of Punjab, India. The data were collected and analysed to study the changes pre and post COVID conditions of the farmers and integrated fish farming units. Statistical analysis of the collected data on status of integrated fish farming system during pre and post-COVID situations (same farmers were surveyed both the time) were analysed using MS-Excel.

3. Result and Discussion

3.1 Pre and post covid status

The COVID-19 pandemic had an adverse effect on farmer mobility, input and produce logistics, and consumer demand, which resulted in lower net income than anticipated and a potential net loss in the first half of 2020. Large aquaculture farms were more likely than small farms to experience negative effects from higher input costs and lower fish market prices (table 1, 2, 3 and Fig. 1).

Table 1: Pre and post covid status of integrated fish farming in Punjab state.

Sr. No.	District	Number of farmers		Number of farmers left farming	Comments
		Pre-covid	Post-covid		
1	Ludhiana	9	8	1	1 Left piggery
2	Patiala	1	0	1	Only fish farming, left duck farming
3	Barnala	9	7	2	1 stopped piggery & 1 stopped Integrated fish cum goat farming due to family reasons 2 farmers started (fish cum pig farming & Fish cum poultry farming) during Covid-19 situations
4	Sangrur	11	7	4	
5	Faridkot	3	3	0	
6	Amritsar	1	1	0	
7	Moga	1	1	0	
8	Ferozpur	5	5	0	
9	Hoshiarpur	2	2	0	
10	Kapurthala	4	2	2	1 left due to Covid, 2 due to lack of source of piglets
11	Mansa	4	4	0	
12	Bathinda	4	1	3	1 stopped even fish farming, 2 not surveyed due to lack of mobile connectivity
13	Jalandhar	4	4	0	1 stopped piggery due to Covid but going to start poultry soon
14	Rupnagar	4	3	1	1 stopped due to loss during Covid
15	Fatehgarh Sahib	3	1	2	2 stopped due to Covid
16	SBS Nagar	2	1	1	
17	Gurdaspur	2	1	1	1 stopped due to family reasons
18	Fazilka	1	1	0	
19	Mohali	1	1	0	
20	Tarn Taran	2	2	0	
	Total	73	55	18	

Table 2: Changes (%) in the status of integrated fish farmers during Covid pandemic.

Sr. No.	District	Number of farmers		Farmers presently engaged in integrated farming (%)
		Pre-covid	Post-covid	
1	Ludhiana	9	8	88.88
2	Patiala	1	0	0
3	Barnala	9	7	77.7
4	Sangrur	11	7	63.63
5	Faridkot	3	3	100
6	Amritsar	1	1	100
7	Moga	1	1	100
8	Ferozpur	5	5	100
9	Hoshiarpur	2	2	100
10	Kapurthala	4	2	50
11	Mansa	4	4	100
12	Bathinda	4	1	25
13	Jalandhar	4	4	100
14	Rupnagar	4	3	75
15	Fatehgarh Sahib	3	1	33.33
16	SBS Nagar	2	1	50
17	Gurdaspur	2	1	50
18	Fazilka	1	1	100
19	Mohali	1	1	100
20	Tarn Taran	2	2	100

Table 3: Overall changes in the status of integrated fish farmers of Punjab.

Situation	Number of farmers	Percentage of farmers
Pre- Covid	73	100
Post- Covid	55	75
Farmers left Integrated fish Farming during Covid	18	25

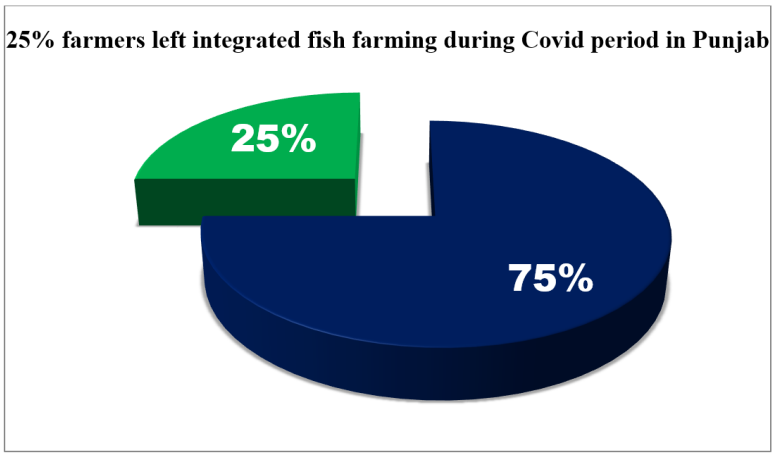


Fig 1: Changes in the status of integrated fish farmers of Punjab

3.2 Key findings of the present research survey

During the present survey (personal and telephonic conversation), following observations were recorded: -

1. In Ludhiana district, out of total farmers (09) in Ludhiana, 88.88% (N=08) of them still engaged in the integrated fish farming. Only one farmer has left the piggery due to the loss during Covid period.
2. In Patiala district, we have recorded that before the farmer was doing integrated fish-cum-duck farming, but presently he is only continuing with the fish farming. After being asked even, he didn't gave the specific reasons to shift from integrated farming to fish farming only.
3. In Barnala district, out of 09 farmers, 07 are continuing with the practice of integrated farming, among them one farmer has left the piggery due to loss during Covid period and one stopped fish cum goat farming due to family issues.
4. In Sangrur district, out of total (11), 63.63% (N=07) are still engaged with the activity of integrated fish farming. 04 farmers have left the practice of integrated farming due to heavy loss during Covid period.
5. In Kapurthala district, Out of total 04 farmers, 02 have left the integrated farming. After being surveyed, they have responded that one of them has left due to loss during Covid period and another has left the practice due to lack of source of piglets.
6. In Bathinda district, we have recorded that even the farmer has left the practice of fish farming also due to loss during Covid period.
7. In Jalandhar district, it was surveyed and observed that farmers are continuing with the practice of integrated fish farming. But one of them has stopped the piggery due to loss during Covid period but planning to start the integration with poultry soon.
8. In Rupnagar district, out of total (04) farmers, one has stopped the integrated farming due to the loss during Covid period.
9. In Fatehgarh Sahib district, out of total (03) farmers, 02 have stopped the practice of integrated farming due to loss during Covid and only one farmer (33.33%) has continuing with the practice of integrated farming presently.
10. In SBS Nagar district also, one farmer has stopped the integrated fish farming due to loss during Covid period.
11. In Gurdaspur district, after surveying, we came to know that one farmer has stopped the Integrated Fish-cum-pig farming due to some family reasons.

Based on the above observations, it could be concluded that the main reason behind stopping or leaving the practice of integrated fish farming were the losses during covid period. Most of them have told with sorrow that situation was really worst and they were forced to discard their produce (pig) at very low cost. Due to this reason, they have encountered huge economic loss and decided to stop the practice of ingratiation. Some of them have responded that they are going to shift from one system to another (like piggery to duck farming) due to loss during Covid period. It was also reported that Covid is not only the reason behind leaving the practice of integrated farming, but some of them have left due to lack of piglets in nearby locality.

The data obtained in the present study revealed that among all the farmers majority of the farmers are still doing fish farming and left subsidiary integration of animal husbandry. Whereas, in Barnala district, two farmers have started integrated fish farming during this Covid-19 pandemics. So overall integrated fish farming have proven more resilient over the others and similar findings were in concordance with Fang *et al.* (2021) [7]. Moreover, we have observed that some people have reduced the area of integrated farming as their children are settled abroad (outside India) now and no one to look after the farming practices in Punjab. Therefore, they have reduced their farming up to the greater extent. As per the present research survey, it was reported that farmers of Punjab have confronted a massive economic loss due to this Covid pandemic. Similar findings were recorded by Gosh *et al.* (2022) [9], who have reviewed the economic impacts of COVID-19 on aquaculture and fisheries sector and concluded that COVID-19 along with its preventive measures have greatly caused the fish price volatility. The other reasons affected integrated farming in Punjab were disruptions in the supply chain of fisheries and aquaculture, temporarily halting of fishing activities and overcrowded aquaculture farms due to reduced fish sales during COVID-19 which were in agreement with other similar studies (FAO, 2020, Ahmed and Azra, 2022, Di Marcantonio *et al.*, 2022, Van Senten *et al.*, 2020, Mamun *et al.*, 2020, Sunny *et al.*, 2021, Ruiz-Salmón *et al.*, 2021) [8, 2, 6, 17, 13, 16, 15]. Moreover, it has disordered the fish demand and supply chain also. On the basis of the statistical analysis of data collected, it was concluded that out of total, 25% of the farmers have left the practice of integrated

farming due to the various reasons as discussed above. But among all the reasons, economic loss during the covid-19 period was observed as the main reason behind stopping or leaving the practice of integrated fish farming in the state of Punjab.

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5. References

1. Adhikari J, Timsina J, Khadka SR, Ghale Y, Ojha H. COVID-19 impacts on agriculture and food systems in Nepal: Implications for SDGs. Agricultural Systems. 2021;186:102990.
2. Ahmed N, Azra MN. Aquaculture Production and Value Chains in the COVID-19 Pandemic. Curr. Environ. Health Reports; c2022. p. 1-13.
3. Amjath-Babu TS, Krupnik TJ, Thilsted SH, McDonald AJ. Key indicators for monitoring food system disruptions caused by the COVID-19 pandemic: Insights from Bangladesh towards effective response. Food Security. 2020;12(4):761-768.
4. Bene C. Resilience of local food systems and links to food security: A review of some important concepts in the context of COVID-19 and other shocks. Food Security. 2020;12(4):805-822.
5. Campbell SJ, Jakub R, Valdivia A, Setiawan H, Setiawan A, Cox C, *et al*. Immediate impact of COVID-19 across tropical small-scale fishing communities. Ocean & Coastal Management. 2021;200:105485.
6. Di Marcantonio F, Solano-Hermosilla G, Ciaian P. The COVID-19 Pandemic in the Agri-Food Supply Chain: Impacts and Responses. Evidence from an EU Survey; EU Publications: Luxembourg; c2022.
7. Fang P, Belton B, Zhang X, Win HE. Impacts of COVID-19 on Myanmar's chicken and egg sector, with implications for the sustainable development goals. Agricultural Systems. 2021;190:103094.
8. FAO. The Impact of COVID-19 on Fisheries and Aquaculture Food Systems, Possible Responses; FAO: Rome, Italy; c2020.
9. Gosh K, Chowdhury S, Acharjee DC, Mamun AA, Ghosh R. Assessing the Economic Impacts of COVID-19 on the Aquaculture and Fisheries Sectors in Relation to Food Security: A Critical Review. Sustainability. 2022;14:8766. https://doi.org/10.3390/su14148766
10. Kakoolaki S, Ebne Al-Torab SAM, Ghajari A, Anvar AA, Sepahdari A, *et al*. Socio-economic impacts of Coronavirus (COVID-19) outbreak on world shrimp aquaculture sector. Iranian Journal of Aquatic Animal Health. 2020;6(1):1-18.
11. Kumaran M, Geetha R, Antony J, Vasagam KPK, Anand PR, Ravisankar T, *et al*. Prospective impact of Corona virus disease (COVID-19) related lockdown on shrimp aquaculture sector in India: A sectoral assessment. Aquaculture. 2021;531:735922.
12. Laborde D, Martin W, Swinnen J, Vos R. COVID-19 risks to global food security. Science. 2020;369(6503):500-502.
13. Mamun AA, Shieh J, Belton B. Qualitative Assessment of COVID-19 Impacts on Aquatic Food Value Chains in Bangladesh (Round 1); CGIAR Research Program on Fish Agri-Food Systems (FISH): Penang, Malaysia; c2020.
14. Rasul G, Nepal AK, Hussain A, Maharjan A, Joshi S, Lama A, *et al*. Socio-economic implications of COVID-19 pandemic in South Asia: Emerging risks and growing challenges. Frontiers in Sociology. 2021;6(23):629693.
15. Ruiz-Salmón I, Fernández-Ríos A, Campos C, Laso J, Margallo M, Aldaco R. The Fishing and Seafood Sector in the Time of COVID-19: Considerations for Local and Global Opportunities and Responses. Curr. Opin. Environ. Sci. Health. 2021;23:100286.
16. Sunny AR, Sazzad SA, Prodhan SH, Ashrafuzzaman M, Datta GC, Sarker AK. *et al*. Assessing Impacts of COVID-19 on Aquatic Food System and Small-Scale Fisheries in Bangladesh. Mar. Policy. 2021;126:104422.
17. Van Senten J, Engle CR, Smith MA. Effects of COVID-19 on U.S. Aquaculture Farms. Appl. Econ. Perspect. Policy. 2020;43:355-367.