

Constraints in Implementation of Pradhan Mantri Matsya Sampada Yojana (PMMSY) in Ayodhya Division of Uttar Pradesh, India

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ABSTRACT

The current research was carried out among small-scale fish farmers in the Ayodhya division, encompassing the districts of Ayodhya and Ambedkar Nagar in Uttar Pradesh. This study investigates the challenges they encounter under the Pradhan Mantri Matsya Sampada Yojana (PMMSY). Garrett's Ranking Technique was employed to analyze the limitations across three primary categories: Constraints noted by Small-Scale Fish Producers, Constraints upheld by field workers, and Institutional constraints maintained by farmer limitations. Garrett's highest mean scores (57.04, 56.69, and 56.99) for the Ayodhya

division, Ayodhya district, and Ambedkar Nagar district, respectively, indicated that the loss from the perishable nature of produce was the predominant production constraint in all three study units. In the summer, water scarcity (average scores: 55.51, 55.20, and 55.64) and significant initial investment needs (average scores: 54.26, 54.24, and 53.81), which were consistently ranked second and third among all units, followed. The lack of minimum wage establishment was the most significant labor-related issue across all study regions (mean scores: 51.36, 51.46, and 51.46), followed by workplace gender discrimination and insufficient health insurance, highlighting the highly informal and vulnerable conditions of labor in fisheries. Regarding institutional constraints, all three units rated the challenge of acquiring institutional credit as the highest (mean scores: 52.88, 52.67, and 53.10). Subsequently, fishermen cooperatives functioned inadequately, highlighting significant deficiencies in the PMMSY execution framework at the local level.

Keywords PMMSY, Small-scale fish producers, Garrett's ranking technique, Aquaculture constraints, Ayodhya division.

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INTRODUCTION

Fisheries and aquaculture occupy a position of growing strategic importance in India's rural economy, supporting millions of small and marginal producers'

livelihood generating, foreign exchange revenues, and food and nutritional security. Inland aquaculture, primarily carp polyculture, is the foundation of India's expansion as the world's second-largest fish producer, especially in areas like Uttar Pradesh where freshwater ponds and tanks serve as the main production base (Gautam *et al.* 2020). Despite this potential, the industry has historically been characterized by dispersed landholdings, weak institutional ties, low technology adoption, and restricted access to markets and credit, all of which limit small-scale producers' capacity to fully reap the financial rewards of aquaculture (Kumar *et al.* 2018).

The Pradhan Mantri Matsya Sampada Yojana (PMMSY), a flagship umbrella program under the Department of Fisheries, Ministry of Fisheries, Animal Husbandry, and Dairying, was introduced by the Indian government on September 10, 2020, in response to these structural limitations. It will be implemented over the period of 2020–2021 to 2024–2025 and will cost a total of ₹20,050 crore. (Press Information Bureau). By increasing fish production and productivity, modernizing and fortifying the value chain, lowering post-harvest losses, doubling the income of fishermen and fish farmers, and creating more job opportunities throughout the fisheries value chain, the program was intended to bring about a “Blue Revolution.” In an effort to address the whole production-to-market continuum, PMMSY uses a cluster or area-based approach and integrates central sector and centrally sponsored components covering pond construction, hatchery development, cold-chain infrastructure, insurance, and institutional credit facilitation. (Press Information Bureau). However, a growing body of research indicates that there are ongoing implementation gaps between policy design and field-level delivery, and the conversion of scheme recommendations into ground-level outcomes is rarely consistent. Inadequate cold storage and market connections undermine infrastructure gains, beneficiaries often remain unaware of scheme provisions, and those who do access the scheme encounter procedural delays in subsidy disbursement, according to studies conducted across India's various agroclimatic zones. (Kumaran *et al.* 2021). Socioeconomic surveys of fish farming communities in Uttar Pradesh in particular have consistently shown that the producer base is

characterized by small and fragmented landholdings, low literacy, large family sizes, a strong reliance on traditional carp culture, and limited access to institutional credit. (Gautam *et al.* 2020, Upadhyay and Mishra 2020). These structural characteristics shape the extent to which small-scale producers are able to access and benefit from schemes such as PMMSY, and they suggest that implementation constraints are unlikely to be uniform across producer categories or geographic regions.

The effectiveness of institutional intermediaries like primary cooperative societies, which are designed to act as a conduit between government programs and individual farmers, is often reported to be limited by their own slow loan recovery, limited input availability, and inadequate managerial capacity. (Gupta *et al.* 2026). In a similar vein, research on fish marketing systems in eastern Uttar Pradesh has revealed that, even in cases where production-side interventions have shown improvements, inadequate icing and transportation facilities, numerous intermediation layers, and poor market infrastructure continue to undermine small producers' ability to realize their prices. (Kumari and Sharma 2022). Taken together, this literature suggests that the constraints affecting PMMSY implementation operate simultaneously at the level of the individual producer, the intermediary institution, and the surrounding market and infrastructure ecosystem.

Examining these dynamics is especially pertinent in the Ayodhya Division of Uttar Pradesh, which includes the districts of Ayodhya and Ambedkar Nagar, among others. In addition to reflecting many of the more general limitations noted elsewhere in the state, such as summer water scarcity, high initial investment requirements, perishability-related post-harvest losses, and limited institutional credit penetration, the division is characterized by a preponderance of small and marginal fish farmers operating in an agro-ecological zone well suited to composite carp culture. (Gautam *et al.* 2020, Kumar *et al.* 2018). There is still a dearth of empirical research that systematically ranks and analyzes the constraints perceived by small-scale fish producers, field-level functionaries, and institutional stakeholders in this particular division, despite the size of public investment under PMMSY

and the scheme's explicit focus on inclusive, cluster-based development. Few researches have used a structured prioritization technique to determine which restrictions are most important to producers themselves; the majority of studies on fish farmer welfare in Uttar Pradesh have been descriptive in character or limited to socioeconomic profile. (Kumaran *et al.* 2021, Gupta *et al.* 2026).

In light of this, the current study uses Garrett's Ranking Technique as its primary analytical tool to methodically identify and rank the obstacles small-scale fish producers and related stakeholders face when implementing PMMSY throughout the Ayodhya Division. The study intends to produce policy-relevant insights into the particular operational, financial, technical, and institutional bottlenecks that restrict the scheme's efficacy in this region by breaking down the analysis at the district level for Ayodhya and Ambedkar Nagar and then aggregating findings to the divisional level. In order to more fully achieve the scheme's declared objectives of doubling farmer incomes and increasing rural employment, such an analysis is anticipated to contribute to both the academic literature on scheme implementation in India's fisheries sector and the practical task of improving PMMSY delivery mechanisms.

MATERIALS AND METHODS

Methodology

The constraints faced by small-scale fish producers under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) in Ayodhya division were analyzed using Garrett's Ranking Technique, which assigns mean scores to each constraint based on respondents' perceptions. I have selected two district Ayodhya and Ambedkar Nagar. 180 respondent constitutes the sample in ayodhya division. The findings are categorized under three broad heads: constraints observed by small-scale fish producers, constraints preserved by daily workers, and institutional constraints faced by farmers.

$$\text{Percent position} = 100 * (\text{Rij} - 0.5) / \text{Nj}$$

Where,

Rij= Rank given for ith constraint by jth individual

Nj= Number of constraints ranked by jth individual

The percent position of each rank was converted into corresponding scores based on the standardized scale developed by Garrett.

RESULTS AND DISCUSSION

Findings

Constraints observed by small – scale fish producers in Ayodhya district

Problems faced by small-scale fish producers under Pradhan Mantri Matsya Sampada yojana in Ayodhya district (Table 1) outline the main obstacles that field workers, farmers, and small-scale fish producers

Table 1. Problems faced by small – scale fish producers under Pradhan Mantri Matsya Sampada yojana in Ayodhya district.

Sl. No.	Constraints	Mean Garrett's score	Ranks
A. Constraints observed by small – scale fish producers			
1	Loss of due to perishables nature of produce	56.69	I
2	Water scarcity during summer	55.20	II
3	Requires heavy initial investment	54.24	III
4	Un-availability of Laboure in time	52.09	IV
5	Slow growth of fish and high mortality	48.87	V
6	Lack of training to the producers about feeding	48.59	VI
7	Non-availability of specific breed of fingerlings	46.21	VII
8	Poor of knowledge about source of quality feed	46.13	VIII
9	Non-availability of fingerlings at required place		
10	Loss due to predators catch	44.30	X
B. Constraints preserved by the field workers			
1	No minimum wage fixation	51.46	I
2	No health insurance coverage	51.24	II
3	Gender discrimination at work place	50.21	III
4	Long working hours	49.48	IV
5	Seasonal employment	49.66	V
6	Health problems	47.96	VI
C. Institutional constraints preserved by farmer			
1	Difficulty in accessibility institutional credit facility	52.67	I
2	Improper functioning of fishermen cooperatives	51.20	II
3	High initial investment for pond excavation / di-silting	50.11	III
4	Lack of capital and inadequate financial support/ subsidy	46.02	IV

in the Ayodhya district face when trying to obtain institutional help under the Pradhan Mantri Matsya Sampada Yojana (PMMSY). Garrett's Ranking Technique was used to prioritize the limitations; a higher mean Garrett score denotes a more serious issue. With the highest mean Garrett score of 56.69, which secured the top spot, the perishable nature of fish resulting in post-harvest losses appeared as the most critical issue among the production-related restrictions mentioned by small-scale fish producers. This finding underscores the limited availability of cold-chain infrastructure, storage facilities, and effective marketing channels, which sometimes drive farmers to sell their produce immediately after harvest at lower rates. With a mean Garrett score of 55.20, water shortage during the summer was rated second, suggesting that seasonal variations in water supply had a negative impact on fish growth, survival, and overall productivity. Third place went to the need for a significant initial investment in infrastructure, inputs, and pond construction (54.24), indicating that adoption of better aquaculture practices is still hampered by financial constraints. Other important production constraints included the non-availability of labor at the required time (52.09, Rank IV), reflecting increasing labor shortages during peak farming operations. Deficits in technical expertise and extension support are indicated by slow fish growth, high mortality (48.87, Rank V), and lack of training about scientific feeding techniques (48.59; Rank VI). Similar flaws in the aquaculture input supply chain are shown by the unavailability of some fingerling breeds (46.21, Rank VII), inadequate awareness of sources of high-quality feed (46.13, Rank VIII), and the unavailability of fingerlings at the necessary location and time (45.68, Rank IX). Among production restrictions, losses caused by predatory animals had the lowest Garrett score (44.30; Rank X), suggesting that while predation has an impact on output, it is not as serious as the other issues found.

Constraints preserved by the field workers in Ayodhya district

With a mean Garrett score of 51.46 (Rank I), the lack of minimum wage fixation was found to be the most significant concern regarding the limitations that field workers perceived. Lack of health insurance

coverage (51.24; Rank II), which reflects insufficient social security benefits for fisheries workers, came in second. Workplace gender discrimination came in third (50.21), demonstrating the continued existence of disparities in pay and employment prospects. Field workers' livelihood security was further impacted by seasonal employment (49.66; Rank V) and long work hours (49.48; Rank IV). With a Garrett score of 47.96, health issues were given the lowest rank (Rank VI), although they are nevertheless a significant occupational risk because of extended contact to chemicals, water, and unfavorable weather. Institutional constraints further revealed significant challenges in implementing PMMSY effectively.

Institutional constraints preserved by farmer in Ayodhya district

The most critical institutional constraint was difficulty in accessing institutional credit facilities, which obtained the highest Garrett score of 52.67 (Rank I). This suggests that farmers' access to formal financing is still restricted by complicated procedures, collateral restrictions, and loan delivery delays. Improper functioning of fishermen's cooperative societies placed second (51.20), suggesting that many cooperatives are unable to provide timely marketing, input supply, and financial support to members. Third place went to the large initial investment needed for pond excavation and desilting (50.11), highlighting the significant amount of money needed to create and maintain aquaculture infrastructure. Finally, lack of capital and inadequate financial support or subsidy came fourth with a mean Garrett score of 46.02, demonstrating that although government help is offered under PMMSY, many recipients still consider the financial support as insufficient to meet production requirements. Overall, the findings indicate that small-scale fish farmers in Ayodhya area confront a combination of production, labor, and institutional restrictions. The most important factors influencing the effective implementation of PMMSY include post-harvest losses, water shortages, high investment needs, insufficient labor welfare measures, and restricted access to institutional credit. To increase the sustainability and profitability of small-scale aquaculture, these findings point to the necessity of bolstering cold-chain infrastructure, guaranteeing the timely availability of high-quality inputs, grow-

ing extension and training programs, strengthening institutional credit delivery mechanisms, reviving fishermen's cooperatives, and improving financial assistance under PMMSY.

Constraints observed by small – scale fish producers in Ambedkar Nagar

Highlights the main labor, institutional, and production barriers that small-scale fish farmers in the Ambedkar Nagar district face under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) (Table 2). Garrett's Ranking Technique was used to prioritize the limitations; a higher mean Garrett score denotes a more serious perceived issue. With the highest mean Garrett score of 56.99 and the top ranking among production-related restrictions, losses resulting from the perishable nature of fish produce were found to be the most serious issue. This research shows that fish producers are still subject to significant financial losses due to inadequate cold storage facilities, poor post-harvest infrastructure, and ineffective marketing strategies. With a mean Garrett score of 55.64, summer water scarcity came in second, emphasizing the detrimental consequences of seasonal water limitations on pond management, fish development, and production efficiency. Financial limitations continue to be a major obstacle to the adoption of better aquaculture methods, as seen by the third-ranked requirement of a large initial expenditure for pond creation, infrastructure, and production inputs (53.81). With a Garrett score of 53.76, non-availability of labor at the necessary time was ranked fourth, indicating labor shortages during crucial aquaculture operations. Slow fish development and high mortality (49.16; Rank V), which indicate technical and environmental issues influencing fish output, were additional significant production restrictions. The sixth-highest ranking (47.79) was "lack of training on scientific feeding practices," indicating that recipients had little technical expertise and little extension support. There are flaws in the seed delivery system when fingerlings are not available at the necessary location and time (46.10, Rank VII) or when certain breeds of fingerlings are not available (46.01; Rank VIII). Although they were comparatively less severe, losses from predatory animals (44.87, Rank IX) and a lack of information about high-quality feed sources (43.88;

Table 2. Problems faced by small - scale fish producers under Pradhan Mantri Matsya Sampada yojana in Ambedkar Nagar district.

Sl. No.	Constraints	Mean Garrett's score	Ranks
A. Constraints observed by small – scale fish producers			
1	Loss of due to perishables nature of produce	56.99	I
2	Water scarcity during summer	55.64	II
3	Requires heavy initial investment	53.81	III
4	Un-availability of Labour in time	53.76	IV
5	Slow growth of fish and high mortality	49.16	V
6	Lack of training to the producers about feeding	47.79	VI
7	Non-availability of fingerlings at required place	46.10	VII
8	Non-availability of specific breed of fingerlings	46.01	VIII
9	Loss due to predators catch	44.87	IX
10	Poor of knowledge about source of quality feed	43.88	X
B. Constraints preserved by the Field workers			
1	No minimum wage fixation	51.46	I
2	No health insurance coverage	51.24	II
3	Gender discrimination at work place	50.21	III
4	Seasonal employment	49.66	IV
5	Long working hours	49.48	V
6	Health problems	47.96	VI
C. Institutional constraints preserved by farmer			
1.	Difficulty in accessibility institutional credit facility	53.10	I
2.	Improper functioning of fishermen cooperatives	52.76	II
3.	High initial investment for pond excavation/ di-silting	49.66	III
4.	Lack of capital and inadequate financial support/ subsidy	44.49	V

Rank X) still constitute significant barriers that lower production efficiency and profitability.

Constraints preserved by the field workers

Constraints preserved by the field workers in Ambedkar Nagar

Regarding the constraints perceived by field workers, the absence of minimum wage fixation was identified as the most serious issue, with a mean Garrett score of 51.46 (Rank I). Lack of health insurance coverage (51.24, Rank II) came in second, showing insufficient social security benefits for fishermen. Third position went to gender discrimination in the

workplace (50.21), indicating the presence of unequal employment opportunities and income inequities. The livelihood stability and working circumstances of fishermen were further impacted by seasonal employment (49.66, Rank IV) and extended work hours (49.48, Rank V). Health problems were considered the least severe of labor-related constraints, with a Garrett score of 47.96 (Rank VI), but, due to ongoing exposure to aquatic conditions and physically demanding work, they remain a major occupational concern.

Institutional constraints preserved by farmer in Ambedkar Nagar

With a mean Garrett score of 53.10, the institutional restrictions show that farmers' biggest obstacle was getting access to institutional financing facilities. This suggests that complex paperwork, administrative hold-ups, and limited access to formal financial institutions continue to impede the successful implementation of PMMSY. The second-highest grade (52.76) for poor operation of fishermen's cooperative organizations revealed inadequate institutional support in the areas of input supply, marketing, and financial services. Third place went to the high initial investment needed for pond excavation and desilting (49.66), which reflects the significant capital needed for the development of aquaculture infrastructure. With a mean Garrett score of 44.49, lack of capital and insufficient financial help or subsidy ranked fourth, suggesting that many recipients believe the current financial aid provided by PMMSY is insufficient. Overall, the findings demonstrate that small-scale fish farmers in the Ambedkar Nagar region are unable to successfully adopt PMMSY due to a number of labor, production, and institutional hurdles. Post-harvest losses resulting from the perishable nature of fish, seasonal water shortages, high investment costs, inadequate worker welfare provisions, and limited access to institutional credit were identified as the most significant issues. By addressing these constraints through the development of cold-chain infrastructure, improved management of water resources, timely availability of high-quality fish seed and feed, strengthened cooperative institutions, enhanced capacity-building programs, and simpler access to institutional financing, PMMSY's efficacy and the

Table 3. Problems faced by small – scale fish producers under Pradhan Mantri Matsya Sampada yojana in Ayodhya division.

Sl. No.	Constraints	Mean Garrett's score	Ranks
A. Constraints observed by small – scale fish producers			
1	Loss of due to perishables nature of produce	57.04	I
2	Water scarcity during summer	55.51	II
3	Requires heavy initial investment	54.26	III
4	Un-availability of Laboure in time	52.83	IV
5	Slow growth of fish and high mortality	48.99	V
6	Lack of training to the producers about feeding	47.96	VI
7	Non-availability of specific breed of fingerlings	46.33	VII
8	Non-availability of fingerlings at required place	45.71	VIII
9	Loss due to predators catch	44.82	IX
10	Poor of knowledge about source of quality feed	44.55	X
B. Constraints preserved by the Field workers			
1	No minimum wage fixation	51.36	I
2	No health insurance coverage	50.57	II
3	Gender discrimination at work place	50.48	III
4	Long working hours	49.73	IV
5	Seasonal employment	49.11	V
6	Health problems	48.76	VI
C. Institutional constraints preserved by farmer			
1	Difficulty in accessibility institutional credit facility	52.88	I
2	Improper functioning of fishermen cooperatives	52.17	II
3	High initial investment for pond excavation / di-silting	49.69	III
4	Lack of capital and inadequate financial support/ subsidy	45.26	IV

livelihood security of small-scale fish producers would be greatly increased.

Constraints observed by small – scale fish producers in Ayodhya Division

Provides a combined analysis of the main obstacles faced by farmers, field workers, and small-scale fish producers in the Ayodhya Division under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) (Table 3). Garrett's Ranking Technique was used to rank the restrictions higher mean Garrett scores denoted more serious perceived issues. With the highest mean Garrett score of 57.04 and the top ranking among production-related restrictions, losses resulting from

the perishable nature of fish produce appeared as the most severe difficulty. This study reveals that fish producers continue to incur considerable financial losses due to poor post-harvest infrastructure, a lack of cold-chain facilities, and ineffective marketing methods. Summer water shortage ranked second with a mean Garrett score of 55.51, suggesting that pond management, fish development, and output performance are significantly impacted by seasonal water limits. The financial burden connected with aquaculture firms was highlighted by the third-ranked demand of a considerable initial expenditure for pond building, input procurement, and infrastructure development (54.26). Non-availability of workers at the required time obtained the fourth place with a Garrett score of 52.83, indicating labor shortages during times of peak output. Slow fish development and high mortality (48.99, Rank V), which implies biological and environmental factors limiting fish productivity, were the remaining production constraints. The sixth-highest grade (47.96) for lack of training on scientific feeding procedures indicates that recipients have inadequate technical knowledge and extension services. Deficits in the fish seed supply system are indicated by the unavailability of particular fingerling breeds (46.33; Rank VII) and fingerlings at the requisite location and time (45.71, Rank VIII). Although they still have an impact on farm profitability and production, losses from predatory animals (44.82, Rank IX) and a lack of knowledge about high-quality feed sources (44.55, Rank X) were seen as relatively less severe limitations.

Constraints preserved by the field workers in Ayodhya Division

With a mean Garrett score of 51.36 (Rank I), the lack of minimum wage fixing was seen as the most significant issue with regard to the constraints encountered by field workers. The next indicator of inadequate social protection for workers in the fishing business was the absence of health insurance coverage (50.57, Rank II). Gender discrimination in the workplace came in third place (50.48), indicating persistent differences in compensation and job opportunities. Long work hours (49.73, Rank IV) and seasonal employment (49.11, Rank V) were also identified as important labor-related problems affecting livelihood security. A Garrett

score of 48.76 (Rank VI) for health issues indicates that workers engaged in fishing operations still have significant concerns regarding occupational health.

Institutional constraints preserved by farmer in Ayodhya Division

The institutional restrictions further indicated that gaining access to institutional credit facilities was the primary issue, as seen by the top rank and the highest mean Garrett score of 52.88. This finding implies that complicated loan procedures, documentation limitations, and credit disbursement delays continue to impede farmers' access to official financial institutions. The poor performance of fishermen's cooperative societies ranked second (52.17), suggesting that many cooperative organizations are unable to provide adequate financial support, input supply, and marketing. The considerable initial expenditure required for pond excavation and desilting earned the third position (49.69), underscoring the substantial capital requirement for aquaculture infrastructure development. With a mean Garrett score of 45.26, lack of capital and insufficient financial support or subsidy came in fourth, suggesting that the current financial assistance under PMMSY is thought to be insufficient to meet the investment needs of small-scale fish farmers. Overall the pooled study for Ayodhya Division reveals that small-scale fish producers experience a combination of production, labor, and institutional obstacles that influence the effectiveness of PMMSY implementation. The most pressing issues in the research area were post-harvest losses brought on by the perishable nature of fish, seasonal water scarcity, high initial investment needs, insufficient labor welfare measures, and restricted access to institutional finance. These findings underscore the need to strengthen cold-chain infrastructure, improve water resource management, ensure timely availability of quality fish seed and feed, expand capacity-building and extension programs, improve the functioning of fishermen's cooperative societies, and simplify access to institutional finance and subsidies. In addition to improving the livelihoods of small-scale fish producers in the Ayodhya Division and promoting sustainable aquaculture development, addressing these challenges would increase the effectiveness of PMMSY implementation.

REFERENCES

- Gautam, P., Ananthan, P. S., Krishnan, M., & Tiwari, V. K. (2020). Socio-economic status of fish farmers in selected regions of Uttar Pradesh. *Journal of Krishi Vigyan*, 9 (Special Issue), 267–275.
- Gupta, A., Rathi, R. K., Aman, A. V., Singh, S. S., & Ahmad, M. R. A. (2026). Constraints in accessing services of cooperative societies: A Garrett ranking-based study. *Indian Journal of Extension Education*, 62 (3). <https://doi.org/10.48165/IJEE.2026.623RN01>
- Kumar, D., Mehta, R., Yadav, R., Kumar, S., & Kumar, M. (2018). Studies on fisheries status and socio-economic conditions of fisher community in Dholi region, Muzaffarpur, Bihar, India. *Journal of Entomology and Zoology Studies*, 6 (3), 76–80.
- Kumaran, M., Anand, P. R., Vijayakumar, S., Vimala, D. D., Jayanthi, M., Sairam, C. V., & Vijayan, K. K. (2021). Socio-economics and livelihood status of coastal fishers in the Puducherry Union Territory of India: An exploratory study. *Indian Journal of Fisheries*, 68 (1), 82–91.
- Kumari, S., & Sharma, A. (2022). Socio-economic status of fishers and fish production trends from cage culture in Chandil Reservoir, Jharkhand. *Journal of Krishi Vigyan*, 10 (2), 290–294.
- Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. (2025). Five years of Pradhan Mantri Matsya Sampada Yojana (PMMSY): A review. Department of Fisheries.
- Press Information Bureau. (2020), September 10). PM to launch Pradhan Mantri Matsya Sampada Yojana on 10th September. Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1652573>
- Upadhyay, S. K., & Mishra, J. (2020). Socio-economic profile of the fish farmers in the Gonda and Basti Districts, Uttar Pradesh. *Journal of the Kalash Science*, 8 (1), 33–42.