P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating: 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 4; April 2025; Page No. 627-631

Received: 18-01-2025
Accepted: 26-02-2025

Indexed Journal
Peer Reviewed Journal

Constraints faced by beneficiary farmers in adoption of farm pond technology in Jaipur district

[1]Meenakshi Jakhar, [2]RN Sharma, [3]BS Badhala, [4]Rituraj Sheshma and [5]Vikash Meena

[1]Research Scholar, Department of Extension Education, Sri Karan Narendra College of Agriculture (SKNAU), Jobner, Rajasthan, India

[2]Professor, Department of Extension Education, Sri Karan Narendra College of Agriculture (SKNAU), Jobner, Rajasthan, India

[3]Assistant Professor, Department of Extension Education, Sri Karan Narendra College of Agriculture (SKNAU), Jobner, Rajasthan, India

[4]Department of Horticulture, Swami Keshwanand Rajasthan Agriculture University, Bikaner, Beechhwal Rural, Rajasthan, India

[5]Ph.D. Scholar, Department of Agricultural Extension Education, MPUAT, Rajasthan, India

DOI: https://www.doi.org/10.33545/26180723.2025.v8.i4i.1844

Corresponding Author: Meenakshi Jakhar

Abstract

This study was conducted in the Jaipur district in Rajasthan. Under the agriculture of the director's assistant is 23 AAO circles, Jhotwara (Jaipur). Of which 4 AAO circles see. Hingonia, Jobner, Boraj and Bichun were intentionally chosen for the purposes of studying these AAO circles, adjacent to the Sknau, Employer and 20 km, in which scientists regularly involve technologies in nearby villages. Of these four selected AAO circles, 120 respondents were selected randomly according to the proportional method. The study indicated that the main restriction in the adoption of the technology of agricultural ponds found in "protective soil is under the farmer's pond".

Keywords: Farm pond, constraints, beneficiary farmers

Introduction

A farm pond is a small tank or reservoir stored for the purpo se of storing water for surface drainage. Farm ponds are usef ul for irrigating plants, watering cattle, and producing fish.

Water is an essential and valuable resource that our ecosyste m and agricultural production relies on.

India has an old history of tank technology. In each Rajasthan district there is a drain collection in irrigation tanks. The number of ponds of the excavation type is essential for harvesting excess rainwater on the farm fields. The farmer's pond has a great impact on the change in crop productivity and the intensity of the crop. It also helps in changing the economic situation of farmers. The irrigated area also increases as a result of the building farm pond. India was predominantly agricultural country. It is therefore true that progress in India is very dependent on the development of agriculture. Increased agricultural production depends on the number of factors whose water plays an important role. The activity on the farm is an adaptive, complex and constructive technique for the management of multiple resources that try to balance healthy, economic and social conditions in the basin. Farm Pond is used to integrate planning about better use of soil and water; Given the groundwater and the flow of surface water to form or recognize new and sustainable methods for interaction of water, plants, animals and human soils found within the physical borders of the agricultural pond.

It is true that progress in India depends on the development of agriculture. Increased production of agriculture depends on the number of factors whose water plays an important role. Agriculture sector is one of the most important industries in the Indian economy, which means it is also a huge employer. Approximately 60% of the Indian population works in this sector, which contributes to about 18% to Indian GDP. This share is gradually decreasing every year with development in other areas of the country's economy (Jaganmohan, M., 2020) [4].

Most respondents (81.25%) faced restrictions, such as lack of water availability due to uneven and low precipitation or irregularity of monsoon, followed by a problem in the collection of the document (47.50%), high levels of Evapo-Transpiration in the summer season (37.50%). Lack of leadership (32.00%), electricity and load cure (30.00%), lack of extension of contact with the extension staff and requires more time to obtain information (Jakkawad *et al.* 2020) [5].

The government also encourages this viable technology and supports farmers through subsidies. However, the main obstacle to the implementation of this is the loss of 5-10% of agricultural land. Farmers in rural areas should therefore

be motivated to adopt this technology by performing programs awareness of farmers, field days and educational programs to increase dry land productivity and improve the economic condition. The logging of floods and water after severe or continuous collision causes the destruction of the life of crops and property. Furthermore, the late onset of the monsoon, extended dry spells for more than 10 days during July and August, and the terminal charm during September are not unusual in rain areas. Therefore, productivity in the rain ecosystem in India does not exceed 1.0 t on HA compared to 2.5 t on HA in an irrigated ecosystem. Farmers ponds are widely accepted water collection structures. As they occupy a smaller area, ie less evaporation and better contribution to local people or individual farmers and easy control of an individual farmer (Ramanjaneyulu *et al*., 2018) [7].

The vast majority of respondents (65.00%) faced restrictions, such as the sedimentation of the pond on the farm, followed by respondents who faced limiting wild animals (38.57%) with respect to obtaining a subsidy in the right time (29.28%) faced stress penetration (20.72%). Respondents faced restrictions, such as ignorance of the agricultural ponds between farmers (12.85%), a high degree of evapotranspiration (12.14%), the production land falls under the construction of the agricultural pond (9.28%), farmers were limited. (Chavai *et al*. 2015) [2].

The vast majority of respondents (65.00%) faced limitation, such as the sediments of agricultural ponds, followed by respondents who face the restriction of wild animals (38.5%), with regard to obtaining a subsidy in the right time (29.28%), while the limitations of the electrical load were face to face (20.71. Restrictions such as ignorance on the scheme of the agricultural pond, farmer (12.87%), the high rate of transpiration Evapo (12.14%), productive land falls under the construction of the agricultural pond (9.28%), the beneficiary of the farmer. Very few respondents (2.85%) faced a limitation of incorrect selection of pages for the construction of a pond from a farm due to scientists from the involvement of SAU. (Chavai and Sinde 2017) [1].

The impact of farm pond on soil, water and plant relationship of an agricultural and also on the socio-economic status of the farmers are considered as the main theme of this study.

Objective

To determine the Constraints Faced by Beneficiary Farmers in Adoption of Farm Pond Technology.

Research methodology

In the auxiliary director (agriculture) Jhotwara, Jaipur is 23 circles AAO. Of which 4 AAO circles see. Hingonia, Jobner, Boraj and Bichun were intentionally chosen. Between these four selected AAO circles of 234 recipients 120 respondents were chosen randomly according to the proportional method. Respondents were interviewed with the help of a structured schedule prepared for this purpose at their home and farm and collected data. The collected data was analyzed by means of suitable stastic methods, ie frequencies, percentage average, standard deviations and from the interpretation of findings.

Constraint Index

This index was analyzed to measure and compare the constraints expressed by different respondents. Modified scale of Majhi (2001) [6].

$$CI = \frac{MS \times 2 + S \times 1}{N} \times 100$$

Where,
MS = Most severe
S = severe
N = Total number of respondents

Results and Discussion

1. Category wise constraints perceived by the respondents

In the present investigation the constraints were categorized into 6 categories *viz*., general, financial, infrastructural, educational, climatic and geographical and miscellaneous constraints.

1.1 General constraints faced by the beneficiary farmers

The data referred to in Table 1 revealed that between general restrictions, the "protective land under the farmer's pond" was observed as the main restriction in the first place with an index of the limit of 1.52. This was followed by a "lack of water availability due to uneven and low precipitation or irregular monsoon" with an index of 132 restriction, "lack of correct guidance" with limited index 1.01 in third place, "Earth's expenditure is more than work" fourth place. Similarly, the "Movement / Earth Movement Machine is not available in time" with a limitation index of 0.91, "lack of cooperation" with an index of a limitation of 0.88 and "lack of contact with the extension staff" with a limit of 0.01 was included in the sixth, seven and eight. It was concluded that the main general restriction of farmers in receiving the technology of agricultural ponds was "protective land under the agricultural pond". The finding of this study was supported by the findings of Jakkawad *et al*. (2020) [5].

Table 1: General constraints faced by the beneficiary farmers in adoption of farm pond technology

S. No.	General constraints	Most severe (MS)	Severe (S)	Least severe (LS)	Total score (2xms+s)	Constraint Index (CI) =Total score/ total respondents	Rank
1.	High labour wages	40 (33.34)	33 (27.50)	47 (39.16)	113	0.94	V
2.	Lack of contact with extension personnel	0 (0.00)	1 (0.83)	119 (99.17)	1	0.01	VIII
3.	Lack of proper leadership	28 (23.33)	67 (55.83)	25 (20.84)	123	1.01	III
4.	Protective land goes under farm pond	73 (60.83)	36 (30.00)	11 (9.17)	182	1.52	I
5.	Labour / earth moving machine are not available at time	19 (15.83)	71 (59.17)	30 (25.00)	109	0.91	VI
6.	Expenditure of earth moving machine is more than labour	33 (27.50)	48 (40.00)	39 (32.50)	114	0.95	IV
7.	Lack of cooperation	27 (22.50)	52 (43.33)	41 (34.17)	106	0.88	VII
8.	Lack of availability of water due to uneven and low rainfall or irregular monsoon	52 (43.33)	54 (45.00)	14 (11.67)	158	1.32	II

(Figures in parentheses indicate the percentage)

1.2 Financial constraints faced by the beneficiary farmers

The data given in Table 2 revealed that it was observed between financial restrictions that the "high initial costs of installation of agricultural pond" are the main restrictions in the first place with a limited index of 1.17. "Lack of timely availability of financial assistance from the government through subsidies" with the index of 1,09 restriction was second, "electric fees are more expensive" with a limitation of 1.01 ranked third, "high interest on sanctioned loan" with a limited index of 0.52 recorded fourth, fourth. Similarly, the "lack of knowledge of the loan banking facilities" with an index of 0.26 was placed in sixth place. The findings are supported by the results of SUPE *et al*. (2017) [8].

Table 2: Financial constraints faced by the beneficiary farmers in adoption of farm pond technology n=120

S. No.	Financial constraints	Most Severe (MS)	Severe (S)	Least Severe (LS)	Total score (2xms+s)	Constraint Index (CI) =Total score/ total respondents	Rank
1.	High initial cost of installing farm pond	45 (37.50)	50 (41.66)	25 (20.83)	140	1.17	**I**
2.	Procedure for getting loan from bank / societies is complicated	4 (3.33)	37 (30.83)	79 (65.84)	45	0.38	V
3.	High rate of interest on sanctioned loan	18 (15.00)	26 (21.67)	76 (63.33)	62	0.52	IV
4.	Lack of knowledge of banking facilities for loan	4 (3.33)	23 (19.17)	93 (77.5)	31	0.26	VI
5.	Lack of timely availability of financial help from government through subsidies	48 (40.00)	35 (29.17)	37 (30.83)	131	1.09	II
6.	Electrical charges are more expensive	28 (23.34)	67 (55.83)	25 (20.83)	123	1.01	III

(Figures in parentheses indicate the percentage)

1.3 Infrastructural constraints faced by the beneficiary farmers

The data given in Table 3 revealed that among infrastructural constraints, “Lower quality of plastic sheets” was ranked first with constraint index 0.99, “Use of polythene paper in farm pond” was ranked second with constraint index 0.85, “Leakage from farm pond” was ranked third with constraint index 0.77. Likewise, “Insufficient supply of electricity for irrigating fields” with constraint index 0.66, “Technical staff working in the field is not available” with constraint index 0.35, “Inadequate distribution net work in rural areas” with constraint index 0.22 were ranked fourth, fifth, and sixth, respectively. The findings of this study supported the result of Supe *et al.* (2017) [8] and Jakkawad *et al.* (2020) [5].

Table 3: Infrastructural constraints faced by the beneficiary farmers in adoption of farm pond technology n=120

S. No.	Infrastructural constraints	Most Severe (MS)	Severe (S)	Least Severe (LS)	Total score (2xms+s)	Constraint Index (CI) =Total score/ total respondent	Rank
1.	Leakage from farm pond	34 (28.33)	24 (20.00)	62 (51.67)	92	0.77	III
2.	Technical staff working in the field is not available	5 (4.17)	32 (26.67)	83 (69.16)	42	0.35	V
3.	Insufficient supply of electricity for irrigating fields	16 (13.33)	47 (39.17)	57 (47.50)	79	0.66	IV
4.	Use of polythene paper in farm pond	31 (25.84)	40 (33.33)	49 (40.83)	102	0.85	II
5.	Inadequate distribution network in rural areas	02 (1.67)	22 (18.33)	96 (80.00)	26	0.22	VI
6.	Lower quality of plastic sheets	33 (27.50)	53 (44.17)	34 (28.33)	119	0.99	**I**

(Figures in parentheses indicate the percentage)

1.4 Educational constraints faced by the beneficiary farmers

The data given in Table 4 reveal that among educational constraints, “Inadequate awareness about the advantage of farm pond” was ranked first with constraint index 1.24, “Untrained farmers feel difficulty in construction of farm pond” was ranked second with constraint index 1.02, “Lack of individual’s contact with experts related to farm pond for effective adoption” was ranked third with constraint index 0.61 and “Lack of systematic campaign for popularizing the farm pond” was ranked fourth with constraint index 0.03. The findings are supported by results of Supe *et al.* (2017) [8], Chavai and Shinde (2017) [1].

Table 4: Educational constraints faced by the beneficiary farmers in adoption of farm pond technology n=120

S. No.	Educational constraints	Most Severe (MS)	Severe (S)	Least Severe (LS)	Total score (2xms+s)	Constraint Index (CI) =Total score/ total responders	Rank
1.	Inadequate awareness about the advantage of farm pond	48 (40.00)	53 (44.17)	19 (15.83)	149	1.24	**I**
2.	Untrained farmers feel difficulty in construction of farm pond	46 (38.33)	30 (25.00)	44 (36.67)	122	1.02	II
3.	Lack of individual’s contact with experts related to farm pond for effective adoption	22 (18.34)	29 (24.16)	69 (57.50)	73	0.61	III
4.	Lack of systematic campaign for popularizing the farm pond	0 (0.00)	4 (3.34)	116 (96.66)	4	0.03	IV

(Figures in parentheses indicate the percentage)

1.5 Climatic and geographical constraints faced by the beneficiary farmers

The data given in Table 5 revealed that among climatic and geographical constraints, "Not suitable in dry areas" was ranked first with constraint index 1.42, "High temperature reduces the water level in farm pond" due to more evapo-transpiration was ranked second with constraint index 1.11, "Farm pond sedimentation" was ranked third with constraint index 0.89 and "Improper site selection" was ranked fourth with constraint index 0.73.The findings are supported by Chavai and Shinde (2017) [1] and Jakkawad *et al.* (2020) [5].

Table 5: Climatic and geographical constraints faced by the beneficiary farmers in adoption of farm pond technology

S. No.	Climatic and geographical constraints	Most Severe (MS)	Severe (S)	Least Severe (LS)	Total score (2xms+s)	Constraint Index (CI) =Total score/ total respondents	Rank
(i)	High temperature reduces the water level in farm pond due to more evapo-transpiration	52 (43.33)	29 (24.16)	39 (32.50)	133	1.11	II
(ii)	Not suitable in dry areas	62 (51.66)	47 (39.17)	11 (9.17)	171	1.42	I
(iii)	Improper site selection	22 (18.33)	44 (36.67)	54 (45.00)	88	0.73	IV
(iv)	Farm pond sedimentation	33 (27.50)	41 (34.16)	46 (38.34)	107	0.89	III

(Figures in parentheses indicate the percentage)

1.6 Miscellaneous constraints faced by the beneficiary farmers

The data given in Table 6 revealed that among miscellaneous constraints, "Excess aquatic vegetation grown" was ranked first with constraint index 1.56, "Lack of extension efforts in popularizing the farm pond construction for getting maximum benefits" was ranked second with constraint index 1.07, "Lack of measurement of water depth in pond" was ranked third with constraint index 0.47 and "Problem of motivation of farmers towards construction of farm pond" was ranked fourth with constraint index 0.03. The findings are supported by the study of Chavai and Shinde (2017) [1], Deshmukh *et al.* (2017) [3].

Table 6: Miscellaneous constraints faced by the beneficiary farmers in adoption of farm pond technology n=120

S. No.	Miscellaneous constraints	Most Severe (MS)	Severe (S)	Least Severe (LS)	Total score (2xms+s)	Constraint Index (CI) =Total score/ total respondents	Rank
i.	Excess aquatic vegetation grown	71 (59.16)	45 (37.50)	4 (3.34)	187	1.56	I
ii.	Lack of measurement of water depth in pond	7 (5.83)	42 (35.00)	71 (59.17)	56	0.47	III
iii.	Problem of motivation of farmers towards construction of farm pond	0 (0.00)	4 (3.34)	116 (96.66)	4	0.03	IV
iv.	Lack of extension efforts in popularizing the farm pond construction for getting maximum benefits	38 (31.67)	53 (44.17)	29 (24.16)	129	1.07	II

(Figures in parentheses indicate the percentage)

2. Overall constraints

The data presented in Table - 7 revealed that among the overall constraints, "Climatic and geographical constraints" were up to greatest extent by the beneficiary farmers with MPS 67.98 and ranked first followed by "General constraints" with MPS 64.79 and ranked second, However, the extent of "Miscellaneous constraints" with MPS 59.44 ranked third and "Financial constraints" with MPS 57.96 ranked fourth, and "Educational constraints" with MPS 57.50 and "Infrastructural constraints" with MPS 54.62, respectively ranked fifth and sixth by the beneficiary farmers in adoption of farm pond technology.

Table 7: Overall constraints faced by the beneficiary farmers in adoption of farm pond technology n=120

S. No.	Overall Constraints	MPS	RANK
1.	Climatic and geographical constraints	67.98	**I**
2.	General constraints	64.79	II
3.	Miscellaneous constraints	59.44	III
4.	Financial constraints	57.96	IV
5.	Educational constraints	57.50	V
6.	Infrastructural constraints	54.62	VI

MPS= Mean Per cent Score

Conclusion

The study indicated that "Protective land goes under farm pond" (General constraints), "High initial cost of installing farm pond" (Financial constraints), "Lower quality of plastic sheets" (Infrastructure constraints), "Inadequate awareness about the advantage of farm pond" (Educational

constraints), "Not suitable in dry areas (Climatic and geographical constraints) were perceived as most important constraints faced by the farmers in adoption of farm pond technology.

Policy Implication

Best on the finding of the study it can be recommended that there is vast scope of Farm Pond on farming. Government should focused on training program, demonstration, campus, radio, TV and using other ICT tools at grass root level

Conflict of Interest

No conflict of interest among researchers.

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