

## Role of availability of critical aquaculture inputs and community-managed markets on community-based floodplain wetland management

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**Abstract:** India has extensive wetlands of 2.02 lakh ha. These are basically low-lying floodplain areas. Assam has endowed huge floodplain wetlands and are locally called as *Beel*. These are one of the most important fishery resources of India providing livelihood to thousands of poor people. The average existing fish production of Assam *Beel* is only 173 kg/ha/year against its production potential of 1000-1500 kg/ha/year. A study was conducted in three *Beels* of the Assam state to see the role of two situational independent variables namely availability of critical aquaculture inputs ( $X_1$ ) and community-managed markets ( $X_2$ ) on dependent variable i.e. knowledge levels of *Beel* users for community-based *Beel* fisheries management (Y). The study revealed that community-managed markets was significantly and positively associated ( $P < 0.01$ ) with knowledge levels of *Beel* users on community-based *Beel* fisheries management. Also, between these two variables, community managed market ( $X_2$ ) was found to be most significantly contributing variable ( $t$ -value – 2.91\*\*) on knowledge levels of *Beel* users for community-based *Beel* fisheries management (Y).

**Keywords :** *Beel*, Community based-fisheries management, Wetlands

### INTRODUCTION

India has extensive wetlands of 2.02 lakhs ha (Sugunan and Bhattacharya, 2000). These are low-lying areas and situated in the floodplains of major rivers like Ganga, Brahmaputra, Barak, Godavari, Cauvery and Krishna river basins. So, they are also called as floodplains wetlands (Shrivastava and Bhattacharjya, 2003; Kar, 2007, 2010). They are one of the most important fishery resources in the state of Assam, West Bengal, Bihar, Manipur, Arunachal Pradesh and Meghalaya (Vass, 1997; Sugunan and Bhattacharjya, 2000; Shrivastava and Bhattacharya, 2003; Barman *et al.*, 2008) and provide livelihood to thousands of poor people. Assam has more than 1.0 lakh ha of floodplain wetland and are locally called as *Beel*.

Assam *Beels* constitute more than 70 % of the total lentic water of the state. The average existing fish production of Assam *Beel* is 173 kg/ha/year against its production potential of 1000-1500 kg/ha/year (Shrivastava and Bhattacharjya, 2003; Kar, 2007, 2010). This reveals that the potential utilization of the *Beels* have not been utilized leading to poor fish production of the state. Barman (2004) and Barman *et al.* (2008) indicated that situation variables like availability of critical inputs and transportation and marketing facilities were positively and significantly associated with the knowledge level of

*Beel* users for sustainable development of *Beel* fisheries. The community-based fisheries management may be the viable alternative in this regard.

The existing knowledge level of *Beel* users plays a significant role on successful implementation of the community-based fisheries management. Accordingly, present study was conducted to see the relationship of two situational independent variables viz. availability of critical aquaculture inputs ( $X_1$ ) and community-managed markets ( $X_2$ ) with dependent variable i.e. knowledge levels of *Beel* users on community-based *Beel* fisheries management (Y).

### MATERIALS AND METHODS

The study was undertaken at the three *Beels* namely Kutuha Bar *Beel* (16.00 ha) in Dibrugarh district, Amuguri Basa Pathar *Beel* (49.80 ha) in Golaghat district and Talu Malu *Beel* (22 ha) in Dhubri district of province of Assam. 200 house holds represented by both male and female, were randomly selected from the surrounding three *Beels* and were taken as the sample size of the study. Data were collected during 2007-2009 with the help of personal interview through structured interview schedule. Initially, data were collected through local language and replies were recorded simultaneously in English. Correlation matrix was prepared. Afterwards, correlation coefficient, regression analysis were used to analyze data using soft

ware Statistical Package for Social Sciences (SPSS.Ver.7.50).

For measurement of dependent variable (Y), scale developed by Dana (1987), Sheikh *et al.* 1993), Barman (2004), Barman *et al.* (2008) was taken into consideration with necessary modifications. Respondents were grouped into in three categories (Tables 1, 2 and 3) viz. low, medium and high based on mean standard deviation and their knowledge score on community based fisheries management. Also, for making simple comparison, frequency tables were constructed and percentages were calculated.

## RESULTS AND DISCUSSION

The study revealed that majority i.e. 146 (73 %) *Beel* users obtained medium availability of critical input scores followed by 36 (18 %) low availability critical input scores and only 18 (9%) had obtained high availability critical input scores (Table 1). Similarly, majority of the *Beel* users i.e. 181 (90.5%) obtained medium scores followed by 11 (5.5%) high score followed by 8 (4%) low score on community-managed marketing (Table 2). Further, majority i.e. 100 (50%) obtained medium knowledge scores followed by 52 (26%) low knowledge scores and followed by 48 (24%) medium knowledge scores in regards to *Beel* users' knowledge level community-based fisheries management (Table 3). Table 4 indicates basic features of the data through descriptive statistics under the study. Correlation analysis (Table 5) indicated that

community managed marketing were positively and significantly correlated at 0.01 level of probability ( $P < 0.01$ ) with *Beel* user's with the knowledge level on community-based fisheries management.

Regression analysis revealed that community- managed marketing was found to be most significantly contributing variables that could explain the maximum variability of *Beel* users' knowledge level on community based fisheries management ('t' values 2.91\*\*, significant at 1% ( $P < 0.01$ ) level of significance on *Beel* users knowledge level).

Availability of aquaculture inputs and community-managed marketing are the essential elements for effective development of fishery and aquaculture. Under the community-managed marketing system, *Beel* users are free to procure their aquaculture inputs by themselves as per their choice, need and satisfaction and even at the low cost. Because, there is no involvement of middlemen in overall procurement and marketing. These inputs may be quality fish seeds, different organic and inorganic fertilizers to produce quality fish seeds and table fish, prophylactic and therapeutic drugs, fishing equipments, etc. Community-managed marketing can also bring 'ownership status' and 'we feelings' with respect to management of *Beel* fisheries through direct involvement of *Beel* users in each stage of procurement and marketing. The study also clearly indicated that community-managed marketing is most important situational variables for successful community-based fisheries

**Table 1.** Distribution of respondents according to availability of critical inputs (N=200).

Category	Frequency	%
High availability of critical inputs scores ( up to 9 out of 15)	18	9
Medium availability of critical inputs scores (> 9 and < 12 out of 15 )	146	73
Low availability of critical inputs scores (> 12 out of 15 )	36	18

**Table 2.** Distribution of respondents according to community-managed marketing (N 200).

Category	Frequency	%
Low score on community-managed marketing (< 15 out of 30 )	11	5.5
Medium score on community-managed marketing (15-25 out of 30 )	181	90.5
High score on community-managed marketing ( $\geq$ out of 30 )	8	4.0

**Table 3.** Distribution of respondents according to knowledge level on community-based fisheries management (N=200).

Category	Frequency	Percentage
High knowledge scores (more than 85)	48	24
Medium knowledge scores (75-80)	100	50
Low knowledge scores (< 75)	52	26

**Table 4.** Descriptive statistics indicating basic features of data.

	Minimum	Maximum	Mean	Std. deviation
Availability of critical aquaculture inputs	6.000	18.000	10.380	1.580
Community-managed markets	7.000	26.000	19.810	3.370
Knowledge level of Beel users on community-based fishery management	51.000	96.000	79.420	8.570

**Table 5.** Correlation of different predictors' situational variables with knowledge level of *Beel* users on community-based fisheries management.

S. No. code	Predictor situational variables	'r' values
X <sub>1</sub>	Availability of critical inputs	-0.020
X <sub>2</sub>	Community-managed marketing	0.387 **

\*\* =Significant at 0.01 level of probability (P<0.01)

management. Similar findings have also been reported by Dana (1987), Barman (2004) and Barman *et al.* (2008).

### Conclusion

From the study it is concluded that community-managed markets was significantly and positively associated with knowledge levels of *Beel* users on community-based *Beel* fisheries management. Also, between these two variables, community-managed market was found to be most significantly contributing variable on knowledge levels of *Beel* users for community-based *Beel* fisheries management. This reveals that this variable is the one of the important factors for sustainable development and management of *Beel* fisheries through community-based *Beel* fisheries management program.

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