Perceived barriers to the resilience building by the farmers in flood prone areas of Assam

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ABSTRACT

Flood is the major natural disaster which the state of Assam faces every year. It causes a huge loss to human, animal, crop, infrastructures and natural resources. Since agriculture is the prime source of livelihood and majority of inhabitants resides in rural areas, the impact of flood has a vital role in the living conditions of Assam's population. In the present study different kinds of barriers were identified which found to create resistance in the resilience building by the farmers in the studied area. Here the Garrett's ranking technique was used to rank the barriers associated with the resilience building by the farmers in the study area. The problem of limited skills upon climate smart adaptive livelihood practices got the highest mean score of 65.55 and ranked 1st among all the identified problems however the last rank was given to the problem of limited resources with farmers to invest in climate smart adaptive livelihood practices having mean score 44.44. It was seen that after the extension problem the other key problems in descending order of value were economic problem such as unavailability of quality seeds and planting materials at right time, unavailability of labour in vital period of farming, in addition to which higher wage and lack of post harvest technologies and marketing facilities were also observed along with communication and information problems and socio-personal problem. Moreover reluctance to take up new project due to deprived risk taking ability, lack of awareness and skill on advanced farming technologies, lack of interest in cultivation due to poor return in short term with poor educational status of the farmers were some of the observed barriers.

Keywords: Climate Smart, Adaptive Livelihood, resilience building, marketing facilities, farming.

INTRODUCTION

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The Climate Smart Adaptive Livelihood technologies (CSALT) are in the process of development. Many of these are released and demonstrated in the farmers' field by government and non-government organizations. However, it has not reached in a wide area till now. The barrier of non-awareness of improved practices was also reported in a study in Madhya Pradesh [4]. It was reported that non awareness of technology or improved practices was accounted to be the prominent constraint along with other barriers such as lack of irrigation water, high invasion by insect-pest, high cost of materials, alternate bearing of crop and low profitability. The improved practices require some specific package of practices especially when they have to survive adverse climatic condition. Withstanding a disaster and doing well in terms of production need special inputs and mechanisms. In implementation of these technologies the cost exceeds

the common cost incurred in the traditional practices. For farmers the new improved climate smart adaptive livelihood practices appears as high cost involving technologies. High cost of adaptation, insufficient access to inputs, lack of knowledge about other adaptation options, no access to water, lack of credit, lack of information about climate change, high cost of adaptation and insecure property rights were the main climate change adaptation constraints [3].

The concept of CSALT is new for the farming community. Till date these are special practices due to coverage in limited areas only. Again while demonstrating a new practice many factors acts which leads to the success or failure of the implemented technology. Sometimes the outcomes may not be so significant at the very first moment. All these circumstances results in limited tangibility of the impact of climate smart adaptive livelihood practices. Also since these practices has not reached to a broader area and researches to study the impact are also very few in number and it becomes very difficult to prove the impact of climate smart adaptive livelihood practices in front of farmers due to which convincing them for adopting such practices is not so easy [6].

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What's new about it?

METHODOLOGY

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The study was carried out in the 5 agro climatic zones of Assam. They were Upper Brahmaputra Valley Zone (UBVZ), Central Brahmaputra Valley Zone (CBVZ), Lower Brahmaputra Valley Zone(LBVZ), North Bank Plain Zone (NBPZ) and Barak Valley Zone (BVZ). Dibrugarh, Morigaon, Dhubri, Sonitpur and Cachar districts were selected from each respective zone purposively, depending upon the severity of flood situation. From each selected district, two ADO circles were selected and from each selected ADO circles, three villages were selected depending upon the intensity of flood occurrence. From each selected village 20 nos. of farm families were selected randomly. Out of these, 10 nos. of farm families which adapt more than 50 *per cent* of identified CSALTs were recognised as adopter group of farmers. The another 10 numbers of farm families which adapt less than 50 *per cent* of identified CSALTs or not at all adapt such practices were recognised as non-adopter group of farmers. A total of 60 samples were selected from one ADO circle. Thus from each district 120 nos. of samples were selected. A total of 600 samples were selected in 5 different agro-climatic zones of the state.

The sample farm families were categorized as marginal farm families (land holding 0 to <1 ha), small farm families (land holding 1 to <2 ha), semi medium farm families (land holding 2

to <4 ha) and medium farm families (land holding 4 to <10 ha). The sample farm families were divided into these categories in a ratio of 4:3:2:1. From the respondent farmers' information on different kinds of barriers were collected. The barriers are then ranked by applying Garrett's ranking technique. The order of merit assigned by the respondents was converted into scores using the formula given by Garrett and Woodworth [8].

$$\text{Per cent position} = \frac{100(Rij\,0.5)}{Nj}$$

Where, R_{ij} = the rank of the i^{th} item by j^{th} individual and

N_j = the number of items ranked by the j^{th} individual

RESULTS AND DISCUSSION:

The CSALTs are in the process of development. Many of these are released and demonstrated in the farmers' field by government and non-government organizations. However, it has not reached in a wide area till now. A lot of population is still unaware of the CSALT practices. In implementation of these technologies the cost exceeds the common cost incurred in the traditional practices. For farmers the new improved climate smart adaptive livelihood practices appears as high cost involving technologies.

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Table 1 shows the problems identified by Garrett's ranking technique in the different zones studied. All the zones showed almost similar trend of problems in CSALT. A similar result was reported in a study in Bihar [5]. The problem of lack of interest in cultivation due to poor return in short term and poor education level of the farmers also a reason of non adoption of CSALT [9]. Similar problems were also reported from in Kashmir valley [7].

The average ranking of perceived barriers to the resilience building by the farmers in the whole study area (average of 5 zones) revealed that the problem of limited skills upon CSALT practices got the 1st rank (mean score 65.32) among all the identified problems. Lack of infrastructures got 2nd rank (mean score 59.30). The problem of unfavourable market situation was ranked 3rd (mean score 55.06). The 4th rank (mean score 54.03) was given to the problem of labour intensiveness. The 5th rank (mean score 52.10) was scored by the problem of high cost involvement in some technologies. The 6th rank (mean score 51.08) was recorded by the problem of lack of verified impact on CSALT practices. The 7th rank (mean score 50.37) was recorded by the problem of low awareness on CSALT practices. The 8th rank (mean score 49.76) was

observed for problem of lack of knowledge and access to credit. The 9th rank (mean score 47.26) was given to lack of government subsidy. The 10th rank (mean score 47.05) was given lack of interest on CSALT. The 11th rank (mean score 47.01) was recorded by the problem of lack of proper communication facilities and the 12th rank (mean score 44.44) was given to the problem of limited resources with farmers to invest in CSALT. Hence, from the whole study area (Table 1) comprising 5 zones the obvious order of the importance of problems was observed. The problem of limited skills upon CSALT was the most serious problem which was followed by the problem of lack of infrastructures and the problem of unfavourable market situation. In case of least importance the problem of limited resources with farmers to invest in CSALT was recorded this was followed by the problem of lack of proper communication facilities and the problem of lack of government subsidy. Almost same order of importance of the problems was reported in a study conducted for examining the problems faced by farmers in adoption of improved technologies [5]. The financial constraints like lack of required finance and high cost of inputs comes out as major limitations in adaptation of crop-livestock integrated system at Madhya Pradesh [2]. Lack of credit was one of the main climate change adaptation constraints [3]. The main constraints identified during the study in adoption of the IFS models were social problems, knowledge & skill, financial and disease and pest [1].

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CONCLUSION

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2. Research deficiencies?

The problem of limited skills upon CSALT was the most serious problem which was followed by the problem of lack of infrastructures and the problem of unfavourable market situation. In case of least important problems the problem of limited resources with farmers to invest in CSALT, the problem of lack of proper communication facilities, the problem of lack of government subsidy and the problem of lack of interest on CSALT were observed.

Government must participate in increasing the awareness on CSALT which will facilitate the farmers in maximum adoption of these practices. The extension agents, local level functionaries can act upon this. More and more use of media for spreading the knowledge about CSALT will serve the purpose. Again, the farmers are needed to be motivated for spreading the knowledge on CSALT to fellow farmers for the maximum reach of such practices to farmers' field. The available platform like societies, self help groups, clubs etc. should be used to spread the knowledge on CSALT.

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Table 1. Ranking of the perceived barriers to the resilience building by the farmers in the studied area

Problem	Upper Brahmaputra Valley Zone		Central Brahmaputra Valley Zone		Lower Brahmaputra Valley Zone		North Bank Plain Zone		Barak Valley Zone		Average For all zones	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Low awareness on Climate smart livelihood practices	48.48	VIII	50.83	VI	51.92	VI	47.89	VIII	52.75	V	50.37	VII
High cost involvement in some technologies	52.75	V	51.40	V	51.43	VII	53.76	IV	51.14	VII	52.10	V
Lack of verified impact of Climate smart livelihood practices	50.83	VI	50.32	VII	51.98	V	50.51	VI	51.78	VI	51.08	VI
Lack of knowledge and access to credit	49.94	VII	49.72	VIII	49.58	VIII	50.11	VII	49.46	VIII	49.76	VIII
Lack of proper communication facilities	47.20	X	48.22	IX	45.29	XI	47.78	IX	46.58	XII	47.01	XI
Lack of infrastructures	60.22	II	58.58	II	59.27	II	60.39	II	58.02	II	59.30	II
Lack of government subsidy	45.80	XI	47.62	X	48.65	IX	45.07	XII	49.15	IX	47.26	IX
Problem of labour intensiveness	53.83	IV	53.95	IV	54.50	IV	53.58	V	54.28	IV	54.03	IV
Limited resources with farmers to invest in Climate smart livelihood practices	44.88	XII	44.65	XII	43.36	XII	46.31	XI	43.78	XI	44.44	XII
Limited skills upon Climate smart livelihood practices	65.61	I	65.42	I	65.71	I	64.44	I	65.40	I	65.32	I
Lack of interest on Climate smart livelihood practices	47.37	IX	46.53	XI	46.80	X	47.75	X	46.80	X	47.05	X
Unfavourable market situation	54.80	III	55.04	III	56.12	III	53.95	III	55.37	III	55.06	III