*Plant Archives* Vol. 25, No. 1, 2025 pp. 1335-1340 e-ISSN:2581-6063 (online), ISSN:0972-5210

Plant Archives

Journal homepage: http://www.plantarchives.org

DOI Url : https://doi.org/10.51470/PLANTARCHIVES.2025.v25.no.1.198

# FARMERS' PERCEPTION ON ADMINISTRATIVE FLOOD MITIGATION MEASURES- A STUDY IN FLOOD AFFECTED DISTRICTS OF ASSAM INDIA

**Afsana Rahman[1*] and Sundar Barman[2]**

[1]Department of Extension Education, Assam Agricultural University, Jorhat-13, Assam, India.

[2]Department of Extension Education, FA, AAU, Jorhat-13, Assam, India.

*Corresponding author E-mail: rahmanafsana1111@gmail.com

(Date of Receiving-14-02-2025; Date of Acceptance-18-04-2025)

**ABSTRACT**

Recurring flood is a major challenge in the Flood Prone Areas of Assam. Annually 39.58% area and around 33,27,968 population are affected by flood. It is important to inform the policy makers about various administrative mitigation measures perceived at local levels. The present study was conducted in Jorhat and Majuli district of Assam to study farmer's perception level on administrative mitigation measures for mitigating adverse flood effect in the flood affected areas. All total 160 farmers were selected randomly as respondents from eight purposively selected villages of Jorhat and Majuli district of Assam where flood occurred regularly for last ten years. The findings revealed that in terms of pre disaster administrative measures against flood "Suitable highlands are located beforehand for sheltering livestock" has been ranked I followed by "Health camps are organised & vaccinations are given to the flood affected people against diseases like small pox, cholera,typhoid etc.". In terms of measures during flood, "Ensure publicity through available means regarding instructions for evacuation and rescue operations" has been ranked I followed by "Patrolling is done along the river embankments". In terms of Post Disaster measures against flood, "Shifting the flood affected people to the relief camps" has been ranked I followed by "Supplying basic amnesties to the flood affected people as flood relief". In terms pre disaster measures, majority of the respondents were satisfied with organization of health and vaccination camps (57.50%) followed by construction of bunds (45.00%) and location of higher grounds beforehand (42.50%). In terms of during disaster measures, majority of the respondents were satisfied with the proper instructions given for evacuation and rescue operations (36.88%) and patrolling done for security reasons (35.63 %). In terms of post disaster measures, majority of the respondents were fully satisfied with shifting of people to relief camps (70.00%). Documentation of effective administrative flood mitigation measures is very crucial for proper utilization of government fund towards disaster management. Government and non-government organizations should put sincere strategic efforts towards the effective flood administrative measures in order to minimize the adverse impacts of flood on the farming community.

***Key words:*** Farmer's perception, *Flood* administrative measures

## Introduction

Flood is most prevalent natural disaster in the world which devastates both life and economy at a large extent. Flood, an excess of water, can be caused by heavy rainfall followed by inadequate capacity of rivers to hold the water within their banks (NIDM, 2015). When the hazards, imposed by flood, surpass the coping capabilities of the affected population it become disaster. In India, agriculture is the foundation of the economy. Contribution of agriculture in the economy of India can be estimated from the fact that 70 % of Indian population is reliant on agriculture and it contributes 18% to the Gross Domestic product (GDP) of India. Out of the total cultivated area, 60% is depend on the rainfall, thus prone to floods and droughts. Flood and droughts occurring frequently have an adverse effect on our country's economy. Since the

bulk of population is dependent on agriculture directly or indirectly, floods have notably economic, environmental and social consequences. Brahmaputra Valley of Assam is one of the most flood-prone valleys in India. Every year, floods, flash floods, riverbank erosion, and sand deposition on fields demolish the landscape. However, flash floods have become more destructive since the mid-1990s, especially on the northern bank of the Brahmaputra Valley. Native communities living on the riverbanks have developed conventional coping mechanisms in their dwellings, agriculture, livestock-rearing practices, and food storage. They have ways of foresightedness of floods and the weather, which have enabled them to cope and adapt. Until two decades ago, farmers perceived short-duration floods as advantageous because the flood waters brought nutrient-bearing silt that helped boost soil fertility along the riverbanks. But with time the flood situation got worse and created serious hurdles for the people to survive. Flash flood and erratic submergence regimes are the major limitations in increasing the productivity of rice cultivated in rainfed situation in Assam. Floods, flash flood, river bank erosion and sand casting are the most recurrent water- induced vulnerabilities affecting these areas of Assam. All of these hazards have affected the farming society living in the flood prone areas of Assam**.** Recurring flood is a major challenge in the Flood Prone Areas of Assam. Annually 39.58% area and around 19,92,727 population are affected by flood. Flood pose an increased threat in Assam especially in 'Agriculture sector'. Flood has affected the farming community resulting in migration, unemployment, poverty etc. The present study was conducted in Jorhat and Majuli district of Assam to study farmer's perception level on administrative mitigation measures for mitigating adverse flood effect in the flood affected areas.

The reasons of flood in Jorhat and Majuli District are due to excessive rainfall in Assam, Arunachal Pradesh and Nagaland. During flood the rivers get charged with massive quantity of silt and in their movement the rivers alter the condition of flow and sometime changes the river routes causing untold miseries to the people living in its low line basin, making the district exposed to annual flooding. After the great earthquake 1950 the river bed of Brahmaputra is mounting endlessly due to disposition of sand carried down from the upstream. This has also led to the creation of saucer shaped low lying zone in the plain of the district. Unscientific human encroachment and settlement in different flood plain areas is an additional cause of flood. Destruction of forest cover in upper catchment areas of all rivers mainly in Arunachal Pradesh and Nagaland is also a principal cause of flood in Jorhat and Majuli district. This study attempts to evaluate farmers' satisfaction with administrative flood mitigation measures at the local level and, finally, recommends where and how improvement to current measures could be made. Hence, study about the level of farmers' perception and awareness about flood, the severity of various flood impacts, and various adaptation measures in practice at the household level are important in a flood prone region. Evaluation of farmers' satisfaction on administrative flood mitigation measures at the local level and finally recommends where and how improvement to current measures could be made.

## Materials and Methods

The study was conducted in Jorhat and Majuli districts of Upper Brahmaputra valley zone of Assam. A total of 160 farmers were selected from eight villages by proportionate cum random sampling technique. Four villages from each two districts namely Jorhat and Majuli districts were selected purposively by considering number of floods affected farmers. Selected respondents were interviewed personally with the help of specially structured schedule.

Responses regarding perception of farmers on administrative measures were collected in four-point continuum, namely 'Fully Satisfied', 'Satisfied' and 'Partially Satisfied' and "Not Satisfied' with a score of 3, 2,1 and 0 respectively. Weighted Score (WS) and Mean Weighted Score (MWS) was calculated by following formula. To assess farmer's perception on administrative flood mitigation measures a structured schedule was prepared with the help of Assam State Disaster Management Authority regarding Pre-Disaster measures, Measures during flood and Post Disaster measures. The responses were collected from the study area and were presented district wise in respective frequency distribution table.

Weighted mean Score has been calculated using the formula as follows:

$$\text{WMS} = \frac{\text{Sum of product of frequency and score assigned}}{\text{Total number of respondents}}$$

Where

WMS = Weighted Mean Score

Ranking has been done according to the Weighted mean Score. A pretested research schedule was used for collection of data. Appropriate statistical tools such as frequency, percentage, mean, standard deviation, weighted mean score were used for analysis of data.

**Table 1:** Distribution of respondents according to their perception on Pre disaster measures in Jorhat and Majuli district.

| Category | Frequency and Percentage | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Jorhat (n=80) | | | | Majuli (n=80) | | | |
| | Fully satisfied | Satisfied | Partially satisfied | Not satisfied | Fully satisfied | Satisfied | Partially satisfied | Not satisfied |
| I. Construction of bunds | 17(21.25) | 40(50.00) | 13(16.25) | 10(12.50) | 25(31.25) | 32(40.00) | 10(12.50) | 13(16.25) |
| II. Health and vaccination camps are organised | 7(8.75) | 47(58.75) | 11(13.75) | 15(18.75) | 13(16.25) | 45(56.25) | 11(13.75) | 11(13.75) |
| III. Cattle relief and vaccination camps are organised | 0 | 0 | 42(52.50) | 38(47.50) | 0 | 0 | 43(53.75) | 37(46.25) |
| IV. Suitable highlands are located for sheltering livestock | 27(33.75) | 34(42.50) | 18(22.50) | 1(1.25) | 28(34.38) | 34(42.50) | 17(21.25) | 1(1.25) |

**Table 2:** Distribution of respondents according to their perception on Pre disaster measures in Jorhat and Majuli district cumulatively.

| Category | Frequency and Percentage (n = 160) | | | |
|---|---|---|---|---|
| | Fully satisfied | Satisfied | Partially satisfied | Not satisfied |
| I. Construction of bunds | 42(26.35) | 72(45.00) | 23(14.38) | 23(14.38) |
| II. Health and vaccination camps are organised | 20(12.50) | 92(57.50) | 22(13.75) | 26(16.25) |
| III. Cattle relief and vaccination camps are organised | 0 | 0 | 85(53.13) | 75(46.88) |
| IV. Suitable highlands are located for sheltering livestock | 55(34.38) | 68(42.50) | 35(21.88) | 2(1.25) |

**Table 3:** Ranking according to their perception on Pre disaster measures based on Weighted Mean Score.

| Statements | Jorhat ( n= 80) | | | Majuli ( n= 80) | | | Cumulative( n= 160) | | |
|---|---|---|---|---|---|---|---|---|---|
| | WS | WMS | RANK | WS | WMS | RANK | WS | WMS | RANK |
| I. Construction of bunds | 144 | 1.80 | II | 149 | 1.86 | II | 293 | 1.83 | II |
| II. Health and vaccination camps are organised | 126 | 1.58 | III | 140 | 1.75 | III | 266 | 1.66 | III |
| III. Cattle relief and vaccination camps are organised | 42 | 0.53 | IV | 43 | 0.54 | IV | 85 | 0.53 | IV |
| IV. Suitable highlands are locatedfor sheltering livestock | 167 | 2.09 | I | 169 | 2.11 | I | 336 | 2.10 | I |

## Result and Discussion

Farmer's perception on administrative mitigation measures for two sample districts were assessed by considering three aspects (Pre disaster measures, Measures during flood, Post Disaster measures).

### Farmers perception on Pre-Disaster measures

Farmer's perception on administrative mitigation measures (Pre disaster measures) were collected in four-point continuum *i.e* Fully satisfied, satisfied, partially satisfied, Not satisfied

The data presented in the Table 1, Table 2 indicates that majority of the respondents were satisfied with construction of bunds (45.00%), organization of health and vaccination camps (57.50%), location of higher grounds beforehand (42.50%). While 53.13 percent of respondents were partially satisfied with the organization of cattle relief and vaccination camps. This data referred that although cattle relief camps were organized in these areas but the services were not upto the mark. It was clearly observed majority of the respondents of both the district had received pre disaster administrative mitigation measures before the occurrence of flood. The data presented in the Table 3 indicates that the respondents considered "Location of highlands for sheltering livestock" as a satisfactory pre disaster measure provided by the government. With a weighted mean score (2.10) holding the position of rank I, followed by "Construction of bunds", "Organization of health and vaccination camps" and "Organization of cattle relief and vaccination camps" at senond (1.83), third (1.66) and fourth rank (0.53) respectively.

### Farmers perception on measures during disaster

Farmer's perception on administrative mitigation measures (Measures during disaster) were collected in four point continuum i.e Fully satisfied, satisfied, Partially satisfied, Not satisfied

The data presented in the Table 4 Table 5 indicates that majority of the respondents were satisfied with the Proper instructions given for evacuation and rescue operations (36.88%) and patrolling done for security reasons (35.63 %). Respondents were fully satisfied with the digging of drains for easy passage of flood water

**Table 4:** Distribution of respondents according to their perception on Measures during disaster in Jorhat and Majuli district.

| Category | Frequency and Percentage | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Jorhat (n=80) | | | | Majuli (n=80) | | | |
| | Fully satisfied | Satisfied | Partially satisfied | Not satisfied | Fully satisfied | Satisfied | Partially satisfied | Not satisfied |
| I. Proper instructions are given for evacuation and rescue operations | 45(56.25) | 27(33.75) | 8(10.00) | 0 | 4(5.00) | 32(40.00) | 40(50.00) | 4(5.00) |
| II. Experts examine the embankments to ensure any leakage or seepage. | 0 | 12(15.00) | 46(57.50) | 22(27.50) | 1(1.25) | 29(36.25) | 43(53.75) | 7(8.75) |
| III. Digging of drains to create an easy passage of water | 51(63.75) | 10(12.50) | 9(11.25) | 10(12.50) | 0 | 17(21.25) | 42(52.50) | 21(26.25) |
| IV. Patrolling is done for security reasons | 0 | 30(37.50) | 44(55.00) | 6(7.50) | 45(56.25) | 27(33.75) | 8(10.00) | 0 |

**Table 5:** Distribution of respondents according to their perception on Measures during disaster in Jorhat and Majuli district cumulatively.

| Category | Frequency and Percentage (n = 160) | | | |
|---|---|---|---|---|
| | Fully satisfied | Satisfied | Partially satisfied | Not satisfied |
| I. Proper instructions are given for evacuation and rescue operations | 49(30.63) | 59(36.88) | 48(30.00) | 4(2.50) |
| II. Experts examine the embankments to ensure any leakage or seepage. | 1(0.63) | 41(25.63) | 89(55.63) | 29(18.13) |
| III. Digging of drains to create an easy passage of water | 51(31.88) | 27(16.88) | 51(31.88) | 31(19.38) |
| IV. Patrolling is done for security reasons | 45(28.13) | 57(35.63) | 52(32.50) | 6(3.75) |

**Table 6:** Ranking according to their perception on Measures during disaster based on Weighted Mean Score.

| Statements | Jorhat ( n= 80) | | | Majuli ( n= 80) | | | Cumulative( n= 160) | | |
|---|---|---|---|---|---|---|---|---|---|
| | WS | WMS | RANK | WS | WMS | RANK | WS | WMS | RANK |
| I. Proper instructions are given for evacuation and rescue operations | 197 | 2.46 | II | 116 | 1.45 | II | 313 | 1.96 | I |
| II. Experts examine the embankments to ensure any rescue operations | 70 | 0.87 | IV | 104 | 1.30 | III | 174 | 1.09 | IV |
| III. Digging of drains to create an easy passage of water | 213 | 2.66 | I | 76 | 0.95 | IV | 289 | 1.81 | III |
| IV. Patrolling is done for security reasons | 104 | 1.30 | III | 197 | 2.46 | I | 301 | 1.88 | II |

(31.88%). While 55.63 percent of respondents were partially satisfied with the examination done by the experts in the embankments to ensure leakages. It was clearly observed majority of the respondents of both the district had received administrative mitigation measures during the time of flood. The data presented in the Table 6 indicates that the respondents considered "Proper instructions are given for evacuation and rescue operations" as a satisfactory measure during disaster provided by the government. with a weighted mean score (1.96) holding the position of rank I, followed by "Patrolling is done for security reasons", "Digging of drains to create an easy passage of water" and "Experts examine the embankments to ensure any leakage or seepage" at second (1.88) ,third (1.81) and fourth rank (1.09) respectively.

**Farmers perception on post disaster measures**

Farmer's perception on administrative mitigation measures (Post disaster measures) were collected in four point continuum i.e Fully satisfied, satisfied, Partially satisfied, Not satisfied

The data presented in the Table 7, Table 8 indicates that majority of the respondents were fully satisfied with Shifting of people to relief camps (70.00%). Majority of the respondents were partially satisfied with the supply of clothes, food and other basic amnesties (52.50%) and supply of seeds, fertilizers and livestock breeds etc (55.63%) . This data indicated that although government is supplying relief to these flood affected areas but people were not satisfied with the quality of the relief items or may be arrival of reliefs were not in time. It was clearly

**Table 7:** Distribution of respondents according to their perception on Post disaster measures in Jorhat and Majuli district.

| Category | Frequency and Percentage | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Jorhat (n=80) | | | | Majuli (n=80) | | | |
| | Fully satisfied | Satisfied | Partially satisfied | Not satisfied | Fully satisfied | Satisfied | Partially satisfied | Not satisfied |
| I. Supplying food, clothes etc to the people | 0 | 29(36.25) | 43(53.75) | 8(100.00) | 0 | 28(35.00) | 41(51.25) | 11(13.75) |
| II. Supplying seeds, fertilizers, livestock breeds to the people | 0 | 0 | 45(56.25) | 35(43.75) | 0 | 2(2.50) | 44(55.00) | 34(42.50) |
| III. Arranging media coverage in the flood affected areas | 0 | 0 | 33(4.25) | 47(58.75) | 0 | 0 | 43(53.75) | 37(46.25) |
| IV. Shifting the flood affected people to the relief camps | 56(70.00) | 24(30.00) | 0 | 0 | 56(70.00) | 24(30.00) | 0 | 0 |

**Table 8:** Distribution of respondents according to their perception on Post disaster measures in Jorhat and Majuli district cumulatively.

| Category | Frequency and Percentage (n = 160) | | | |
|---|---|---|---|---|
| | Fully satisfied | Satisfied | Partially satisfied | Not satisfied |
| I. Supplying food,clothes etc to the people | 0 | 57(35.63) | 84(52.50) | 19(11.88) |
| II. Supplying seeds, fertilizers, livestock breeds to the people | 0 | 2(1.25) | 89(55.63) | 69(43.13) |
| III. Arranging media coverage in the flood affected areas | 0 | 0 | 76(47.50) | 84(52.50) |
| IV. Shifting the flood affected people to the relief camps | 112(70.00) | 48(30.00) | 0 | 0 |

**Table 9:** Ranking according to their perception on Post disaster measures based on Weighted Mean Score.

| Statements | Jorhat ( n= 80) | | | Majuli ( n= 80) | | | Cumulative( n= 160) | | |
|---|---|---|---|---|---|---|---|---|---|
| | WS | WMS | RANK | WS | WMS | RANK | WS | WMS | RANK |
| I. Supplying food, clothes etc to the people | 101 | 1.26 | II | 97 | 1.21 | II | 198 | 1.24 | II |
| II. Supplying seeds, fertilizers, livestock breeds to to the people | 45 | 0.56 | III | 48 | 0.60 | III | 93 | 0.58 | III |
| III. Arranging media coverage in the flood affected areas | 33 | 0.41 | IV | 43 | 0.54 | IV | 76 | 0.48 | IV |
| IV. Shifting the flood affected people to the relief camps | 216 | 2.70 | I | 216 | 2.70 | I | 336 | 2.10 | I |
| *** WS= Weightage score MWS= Mean weightage score.** | | | | | | | | | |

observed majority of the respondents of both the district had received post disaster administrative mitigation measures after occurrence of flood. The data presented in the Table 9 indicates that the respondents considered "Shifting the flood affected people to the relief camps" as a satisfactory post disaster measures provided by the government. with a weighted mean score (2.10) holding the position of rank I, followed by "Supplying food, clothes etc to the people", "Supplying seeds, fertilizers, livestock breeds to the people" and "Arranging media coverage in the flood affected areas" at second (1.24) ,third (0.58) and fourth rank (0.48) respectively.

The concept of providing short-term flood relief without much reference to the major constraints and problems does not significantly help the region or the poor. Therefore, government should provide more situation specific administrative measures for the betterment of the flood affected people. Access to information about flood and its hazard is a pre requisite for early preparation to adjust with the consequences of flood therefore extension contact specially the N.G.O should take more initiatives collectively in providing information to the flood affected people about flood hazard at the right time. More efforts should be given by the government with the cattle relief and vaccination camps, supply of seeds, fertilizers, food etc. Government should encourage the media houses to take coverage in this issues. Government and non-government organizations should put sincere efforts to meet the needs of the flood affected farmers by organizing awareness campaign on flood. Strategic efforts should be made by the government policy makers in order to minimize the adverse impacts of flood on the farming community.

## Acknowledgement

The author take great pleasure to express her deep sense of gratitude to her major advisor Mr. Sundar Barman, Assistant Professor (stage –II), Department of Extension Education, Faculty of Agriculture, Assam Agricultural University, Jorhat and ADO of Allengmora Circle of Jorhat District,Assam and ADO of Garmur Circle of Majuli District,Assam for unfailing support and respondents of the concerned areas for their immense help and active cooperation. The author also like to acknowledge Dr Jayanta Hazarika, Professor, Department of Agricultural Economics & Farm Management and Mrs. Borsha Neog, Assistant Professor, Department of Agricultural Statistics without whose accurate overview and precise projection, it would not have been possible to bring out this thesis in its proper perspective.

## References

Anonymous (2006). District Agricultural Development Strategy, Agricultural Technology Management Agency, Jorhat.

Anonymous (2010). Assam State Disaster Management Policy 2010, ASDMA, Govt of Assam.

Anonymous (2017-18). Economic Survey of Assam, Transformation and Development Department, Government Of Assam.

Axelrod, C., Killam P.P., Gaston M.H. and Stinson N. (1994). Primary health care and the mid-west flood disaster. Public Health Reports (Washington, D.C. **109(5)**, 601-605.

Anonymous (2001). National Disaster Response Plan, Ministry of Agriculture, Government of India.

Anonymous (2007). National Disaster Management Guidelines-Preparation of State Disaster Management Plan.

Aggarwal P.K. (2008). Global Climate change and Indian agriculture: Impacts adaptation and mitigation. Indian *J. Agric. Sci*., **78**, 911-19.

Anonymous (2009). Geology and Mineral Resources of Assam, Geological Survey of India, Miscellaneous Publication, **No. 30 Part IV Vol 2(i)**.

Anonymous (2010). Annual Report 2010, ASDMA.

Anonymous (2011). District Management Plan of Jorhat, Government of Assam.

Anonymous (2011). Disaster Management in India, Ministry of Home Affairs.

Anonymous (2011). District Census Handbook, Jorhat, Directorate of Census Operation, Assam.

Anonymous (2011). Report of Working Group on Flood Management and Region Specific Issues for XII Plan, Planning Commission, retrieved from (2011http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wr/wg_flood.pdf) on 09-05-2018

Anonymous (2015). Assam State Action Plan on Climate Change (2015-2020), Department of Environment, Government of Assam, India.

Anonymous (2015). National Institute of Disaster Management. Retrieved from http://www.nidm.gov.in/. on 2-4-2018.

Anonymous (2015). Statistics Related to climate change- India 2015, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

Anonymous (2016-2017). Annual Report 2016-2017, Department of Agriculture, Co- Operation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Government of India, Krishibhawan, New Delhi- 1100011.

Anonymous (2017-18). Economic Survey of Assam, Transformation and Development Department, Government Of Assam.

Barman, S., Pathak K. and Pathak P.K. (2013). Training need of Tribal farmers in Rapeseed production technology of Upper Brahmaputra Valley Zone of Assam. *J. Acad. Indus. Res*., **1(11)**, 686-688.

Naveen, V. (2014). Livelihood issues in flood affected farm economy: A case study of Don River Basin, Bijapur district. University of Agricultural Sciences Dharwad, Department of Agricultural Economics.

Sing, R. and Singh U. (2001). Socio economic profile of migrant rural labourers. *Indian. J. Ext. Edu*., **37(3&4)**, 159-163.

Udmale, P., Ichikawa Y., Manandhar S., Ishidiara H. and Kiem A. (2014). Farmers' perception of drought impacts, local adaptation and administrative mitigation measures in Maharashtra State, India. *International Journal of Disaster Risk Reduction*., **10**, 250-269.