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Impact of Flood on the Employment, Labour Productivity and Migration of Agricultural Labour in North Bihar

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Flood devastation creates panic situation during rainy season. In Bihar, the loss due to flood is estimated to be about Rs. 64 crores annually, which accounts for about 35 per cent of the total loss incurred in the country due to floods. It not only affects the agricultural production, properties and lives but also interferes in the labour productivity, employment and wages of agricultural labours which force them to migrate elsewhere either seasonally or permanently. About 90 per cent of the flood prone area of the state lies in North Bihar, which is one of the major factors of the backwardness of this region. In Bihar, on average, 8.47 lakh hectares of total areas and 3.16 lakh hectare of crop land areas are submerged annually for several weeks in the river belts of Ganga, Burhi Gandak, Kosi, Bagmati and Sone in the state and affects 271 blocks of 15 districts and cause huge individual and public losses to the exchequer. About 300 agricultural labourers migrate per day from Bihar. The causes of migration are irregular and scarcity of employment opportunities and low wages in their native place of flood prone districts of Bihar.

So, it was felt to study the extent of employment, labour productivity and migration of agricultural labour in flood prone areas of North Bihar, the most victim region of flood in Bihar and the paper is based on the facts and figures of the study conducted in flood prone area of North Bihar.

METHODOLOGY

The study was conducted in North Bihar, since it constitutes 90 per cent of the total flood affected areas of Bihar. In North Bihar, Darbhanga district is highly flood prone. So, the field survey was conducted in two villages of highly flood prone block, namely Hayaghat of Darghanga district during the year 2023-24. A sample of 25 households from each size group of farms i.e., landless (having no land), marginal (below 1 ha land), small (1 to 2 ha land) and large (more than 2 ha land) making a total sample size of 100 households. Data regarding employment, labour productivity, migration and wage rates were collected with the help of schedules and questionnaires by survey methods. Tabular analysis was done to interpret the results. However, Cobb-Douglus production function was used wherever needed.

Technological change in Agriculture:

Before discussing the employment, labour productivity and extent of migration of agricultural labour for different categories of households in the flood affected area, analysis of input use in agriculture production has been undertaken to throw some light on the technological development in agriculture of the flood affected area. The data on input use of agriculture production has been presented in table 1.

Table 1 Per hectare use of input level on different size groups of farms in flood prone area

Sr. no.	Items	Size Groups			
		Marginal	Small	Large	All farms
I.	Per hectare of area under irrigation in %	91.55	69.96	63.12	74.88
II.	Human labour use in man days	122	114	87	108

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III.	Bullock labour use in days	20	20	11	17
IV.	Machine labour use in days	3.14	3.18	3.41	3.26
V.	Expenditure on seed, manures fertilizers and insecticide and pesticides in Rs.	310	680	655	546

Source: -

I. Economic survey report of Bihar 2024

II. Bihar State Disaster Management Authority

It may be observed from table 1 that area under irrigation was 74.88 per cent but majority area was irrigated by private tubewells and pump sets. Marginal farmers constituted the highest percentage of irrigated area, but they could not provide more than one irrigation to the crops because cost of irrigation by pump set is too costly to be afforded by them. So, the area under irrigation provides an illusive figure in the flood prone area. Average use of human labour per hectare was found 108-man days. The highest per hectare labour use was found 122-man days in marginal farm size group as compared to small (114-man days) and large (87-man days) farm size group because they have surplus labours. The highest per hectare bullock labour use was found 20 bullock days in both marginal and small farm size groups as compared to large farm size groups (11 bullock labour days) due to mechanization on large farm size groups. Machine labour per hectare was found higher on large farm size group (3.41 days/ ha) as compared to small (3.18 days/ ha) and marginal (3.14 days/ ha) farm size group. On average, the expenditure on purchased inputs i.e., seed, manures, fertilizer, insecticides and pesticides were found Rs. 546 per hectare. The highest expenditure per hectare on use of these inputs was found on small farm size group (Rs. 680) as compared to marginal (Rs. 310) and large (Rs. 655) farm size group because small size groups of farms are more efficient in farming in the flood prone area.

Employment Scenario

The stark reality of Bihar rural economy is that the bulk of the work force remain unemployed and under-employed for most of the period in the year. An attempt was made to assess the pattern of employment of sample household of flood prone area has been presented in table 2.

The table reveals that per worker per year employment was observed to be 162-man days. Farming sector, which was the main occupation of most workers in flood affected area, observed to be 25.32 per cent. On the other hand. non-farming sector provided 74.68 percent of employment. Among different size group of farms in flood prone area, per worker employment was comparatively higher on small farm (202-man days) followed by large farm (193-man days), marginal farm (162-man days) and Figure in parentheses indicate percentage of total employment landless (141-man days). It was further observed from the table that as the size of holding increased the percentage employment in non-farming sector increased showing a positive relationship with size of holding and non-farm employment.

Table 2 Pattern of employment on different size groups of households in flood prone area

Group	Sample size	Total workers	Farm sector (employment in days)	Non farming sector	Total employment in days	Employment per worker
Landless	25	58	5599 (57.44%)	2592 (42.56%)	8191	141.2
Marginal	25	35	22.19 (39.11%)	3455 (60.89)	5674	162.11
Small	25	45	1029 (11.34%)	8042 (90.26%)	9071	201.58

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Overall	100	187	7666 (25.32%)	22606 (74.68)	30272	161.88

Sources: - Self collected primary data from Oct 2024 to Dec 2024, compiled and analysis.

Per-worker employment in agriculture as main occupation on different size groups of farms in flood affected (prone) has been presented in table 3.

Table 3 Per worker Employment in agriculture as main occupation on different size group of farms in flood prone area

Group	Sample size	Total workers	Total employment in days	Per worker employment in days
Landless	25	49	3499	71.41
Marginal	25	31	2154	69.48
Small	25	36	990	38.98
Large	25	27	885	32.78
Overall	100	133	7326	56.6

Source: - Self collected primary data during specific period

Per worker employment in agriculture as occupation on different size group of farms in flood affected area revealed that total number of workers in agriculture as a main occupation was observed to be 133-man days and per workers annual employment was 56.60-man days. Among the different size group of farms per worker employment in agriculture was comparatively higher on landless labour household which was accounted to be 71.41-man days. As the size of holding increased the per worker employment as main occupation decreased in agriculture because farmers of large size groups did not prefer to work in field due to false sense of prestige.

Productivity and wage rate of Agricultural:

The wage rate has direct bearing with productivity of labour. It is generally said that the agricultural labours are getting less wages than their marginal value productivity. In this regard, the regression coefficient of human labour was estimated by fitting the Cobb-Douglus function with human labour as independent variable. The marginal productivity and average wage rate of human labour on different size groups of farms has been presented in table 4.

Table 4 Marginal value productivity and wage rate of human labour on different size groups of farms in flood prone area

Sr. no.	Particulars	Size Group			
		Marginal	Small	Large	Combined
I.	Sample size	25	25	25	75
II.	Geometric means of output per hectare	3552.12	4315.67	4361.19	4058.63
III.	Geometric mean of human labour per hectare in man days	119.75	112.73	86.13	105.16
IV.	Regression coefficient of human labour	0.2189	0.3387	0.4919	0.1846

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V.	Marginal value productivity of human labour	6.52	12.97	24.91	7.12
VI.	Mean of average wage of human labour in Rs	5.51	6.81	6.99	6.44

Source: - Self statistical calculations of the collected data

It may be observed from table 4 that marginal value productivity of agricultural labour (7.12) was higher than the wage rate i.e., Rs. 6.44. The gap of MVP and was rate was comparatively higher on large size group of farms than the small and marginal size group of farms, because the large farm size group of farms exploited the labourers due to unemployment and under employment prevailing in agricultural labours in flood affected area. So, the analysis also confirms the notion that agricultural labours are getting less wages than their marginal value productivity.

Migration of Agricultural Labours

In the present paper, the migrant labourers were those who migrated as wage earners only. The present analysis deals with number of migrants, type of job, place of migration, wage rate and percentage of income contributed to their family. The result has been presented in table 5.

It has been observed from the table that the number of male migrants was higher (92.31 per cent) than female migrants in flood prone area. Female migrants were found in landless household only. The most revealing fact is the absence of migration of agricultural labour was found on small and large size groups of farms. The majority of landless category of migrants (77.78 per cent) could find employment as wage earner in agriculture sector. Majority of migrants of marginal group of households had preference for non-agriculture job. About 77.78 per cent of migrants of landless class in flood affected areas were seasonal migrants.

The study further revealed that many migrants of sample households of landless and marginal size group preferred to go outside the state like Punjab, Delhi and other cities for better wage rates. It may be also observed from the table that average wage rate in migrated places was comparatively higher in non-agricultural sector (Rs. 80.25) as compared to agriculture sector (Rs.60).

Table 5 Migration pattern of Agriculture labour on different size groups of households in flood prone area

Particulars	**Size Group**				
	Landless	**Marginal**	**Small**	**Large**	**Total**
Number of migrants					
Male	16 (88.89%)	8 (100%)	-	-	24 (92.31%)
Female	2	-	-	-	2 (17.64%)
Total	18	8	-	-	26
Period of migration	-				
Seasonal	14 (77.28%)	3 (37.20%)	-	-	17
Permanent	4 (22.22%)	5 (62.50%)	-	-	9
Place of migration	-				
Within State	2 (11.11%)	1 (12.50%)	-	-	3

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Outside state	16 (88.89%)	7 (87.50%)	-	-	23
Types of Job					
Agriculture	14 (77.28%)	2 (25.00%)	-	-	16
Non-agriculture	4 (22.22%)	6 (75.00%)	-	-	
Total	18	8	-	-	10
Wage rate	-	-	-	-	-
Agriculture	60	60	-	-	60
Non-agriculture	75	85.5	-	-	80.25 (average)
Percentage of income Contributed to their family	27.27	37.5	-	-	32.38

Source: -

i. Department of Relief and Rehabilitation of Bihar Report 2024.

ii. Agriculture census report of Bihar 2024

Figure in parentheses indicate percentage to total migrants' sector (Rs. 60).

The wage rate was comparatively higher in migrated places than the wage rate of native places. The percentage of income contributed to their family was found on an average, 32.0 per cent of their total income.

CONCLUSION

It emanates from the above discussion that in flood prone area, the flood and water-logging situation have been the major factors for the farmers to adopt and monocropping system Per worker employment in agriculture was lower in this region, confirming the unemployment and under employment among the agriculture labours in flood prone area in Bihar. The consolidated effects of unemployment, low wages, and slack season scarcity of jobs due to lack of infrastructure facilities along with non-availability of adequate job opportunities other than agriculture have accelerated the magnitude of migration of agriculture labourers from native places. The agriculture labours are getting less wages than their marginal value productivity.

Hence, the creation of job opportunities in rural area and better flood control would minimize the migration of agricultural labours. An improvement in productivity of crops and livestock may help in increasing wage rates. Small scale industries like beekeeping, poultry farming, and vegetable and fruits processing in flooded areas will increase the job opportunities to rural mass. An emphasis should also be given to suitable agricultural technology for flooding prone areas.

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