

## LIVELIHOOD SECURITY OF FARMERS IN EASTERN UTTAR PRADESH: AN ECONOMIC ANALYSIS

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**Abstract:** The present study was conducted to investigate and find out the livelihood security status of the farmers in eastern Uttar Pradesh. Varanasi and Sonbhadra districts were purposively selected because these districts are having differences with respect to irrigated and rainfed farming systems respectively. Pindrablock of Varanasi district and Ghorawalblock of Sonbhadra district were selected based on highest net sown area of food crops and to represent various farming systems. Primary and secondary data were used in the study. To address the objectives set forth for the study, primary data were collected from 200 randomly selected farmers for the period 2016-17. Six different livelihood security indicators were constructed based on the prevailing condition of farmers' households in the study area. The index score of indicator ranged from 0 to 1. Higher value of the indicator implies households are better off and more secured in terms of their livelihood. Economic security and habitat security status are in highly vulnerable situation for rain-fed farmers compare to irrigated farmers. This confirmed that around 53 % of the irrigated farmers and around 62 % of the rain-fed farmers were in livelihood insecurity status in the study area.

**Keywords:** Farming System, Livelihood security, Livelihood security index, Social Security

### INTRODUCTION

Agriculture is the main income generating source for small and marginal farmers and they also depend on livestock enterprise for their household income. The income from farming alone in small and marginal farms is barely sufficient to meet the basic needs. With gradual decline in farm size due to explosion of population, it has become increasingly difficult to produce enough food and other farm products for the family. National Commission on Farmers proposed the introduction of appropriate farming systems to achieve better growth in agriculture and livelihood. In recent years, farming systems approach gave a scientific touch to the existing practices and found ways and means to make them sustainable in changing the global scenario. Drinkwater and McEwan (1992) has defined household livelihood security as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration). Livelihoods can be made up of a range of on-farm and off-farm activities which together provide a variety of procurement strategies for food and cash. Thus, each household can have several possible sources of entitlements which constitute its livelihood.

### METHODOLOGY

#### Study area

The study was carried out in Varanasi and Sonbhadra districts of Uttar Pradesh. Both districts Varanasi and

Sonbhadra were selected purposively because these districts are having differences with respect to irrigated and rainfed farming systems respectively. There are total 8 blocks in each district. Pindrablock of Varanasi district and Ghorawalblock of Sonbhadra district were selected based on highest net sown area of food crops and to represent various farming systems.

#### Data Collection

Primary and secondary data were used in the present study. To address the objectives set forth for the study, primary data were collected from 200 randomly selected farmers for the period 2016-17. Multistage random sampling procedure was used for the selection of respondents, on the first stage two blocks was selected and in second stage based on the reconnaissance survey 5 villages in each block was considered for selecting the farmers practicing farming systems. In the third stage from each selected village, 20 farmers were randomly selected who are practicing farming systems. The data pertaining to socio-economic parameters, consumption pattern, health, habitat, educational, social network security, rural development schemes, constraints and others were obtained from the sample households through personal interviews.

#### Analytical tool

To analyze the objective, five-point scale method was used to construct livelihood security Indexes. Indicators are assumed that each indicator has equal weight to the overall household livelihood security index. Household's livelihood security index consisted of six livelihood outcomes and were measured based on accessibility, quality and status. Household livelihood indexes such as Economic,

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Education, Health, Habitat, Food and Social Security were obtained by aggregating the scores of indicators. Each indicator was measured in a different scale. It was first necessary to standardize each indicator as an index for relevant indicator. The standardized indicators of a household will be prepared using the method adopted to calculate Human Development Index (UNDP, 2007), and used by SaravanamutthuJeyarajah (2016). For any component of the HDI, the individual indices can be computed according to the general formula

$$Z_{index} = \frac{Actual\ value - Minimum\ value}{Maximum\ value - Minimum\ value}$$

Each index thus ranges from 0 to 1. If the actual value of the variable is the minimum, the index is zero. If the actual value is equal to the maximum value, the index is one. Higher value of the indicator implies households are better off and more secured in terms of their livelihood. Household Livelihood Security Index (HLSI) will be calculated by averaging the standardized indicators by using formula

$$HLSI = \frac{\sum_{j=1}^J Z_{index}}{J}$$

J = no. of indicators

## RESULT AND DISCUSSION

The livelihood security index is very important to determine whether the livelihood is successful in following their livelihood strategies. Livelihood security Indices such as food, economic, health, education, habitat and social security will be computed by aggregating all the scores of the selected indicators. Livelihood indices were

calculated using standardized value of indicators of the relevant variable. The indicators chosen for this study were based on the literature review of previous researches

### Economic Security

Economic security is the condition of having stable income or other resources to support a standard of living now and in the future. Economic security index of the irrigated farmers was 0.34 and 0.21 of the rain-fed farmers in the study area. The average annual income of farmer was more under irrigated situation (Rs. 261566.79) compared to rain-fed situation (Rs. 231295.6). This implies that the irrigated farmers' households are economically better off and more secured than rain-fed farmers' household.

### Food Security

Food security indicator like monthly food consumption expenditure was selected in the present study. The index of the food security scored a value of 0.45 in irrigated area farmers and 0.38 in rain-fed area farmers. The average monthly food consumption expenditure of farmer was more under irrigated situation (Rs. 8320) compared to rain-fed situation (Rs. 5173). It highlights that food security had a relatively better position among the irrigated farmer than rain-fed area farmers in the present research.

### Health Security

The definition of health security is the capacity of individuals to identify, prevent and manage significant risks to their health. In the present research, indicator like access to primary health care services was used to measure the health security of farmers in the study area.

**Table 1.** Accessibility to Primary Health Services in the study area

Accessibility (Distance in km)	No. of Farmers	
	Irrigated (n=100)	Rain-fed (n=100)
0-2	20	14
2-4	44	20
4-6	36	32
6-8	-	26
8-10	-	8
10&above	-	-
<b>Health Security Index</b>	<b>0.768</b>	<b>0.612</b>

*Source:* Computed from field survey 2016-17

The index of the health security scored a value of 0.77 in irrigated area farmers and 0.61 in rain-fed area farmers. The present study confirmed that the health security was significantly higher for irrigated and rain-fed area farmers in eastern Uttar Pradesh. This might be due to the better investment on health sector at the national level. It should be noted that both values gained the value above the mid-point. This

indicated less vulnerability to the health security of the farmers in eastern Uttar Pradesh. However, small percentage of farmers needs health facilities for their better living.

### Habitat Security

Habitat of the farm households is also one of the factors which influence the livelihood of household. Shyamalie and Saini (2010) defined as the access of

individuals to an adequate shelter and its related resource to ensure that they have a healthy and sanitary environment, protection from detrimental elements to enable safe and secure livelihoods. The index of the habitat security scored a value of 0.25 in irrigated area farmers and 0.21 in rain-fed area farmers. The average value of farmers' house was more under irrigated situation (Rs. 522750) compared to rain-fed situation (Rs. 391200). Due to higher annual income under irrigated situation, the number of farmers with pucca houses, toilet facility

and cooking gas were more compared to those under rainfed situation. In general, farm households under irrigated situation are more secured in terms of habitat.

#### Educational Security

Education is the important necessity of life. Level of education at the individual as well as household level, availability and accessibility of educational institutes and monthly expenditure on education are the major determinants of educational security of households.

**Table 2.** Education Level of Farmers

Level of education	No. of Farmers	
	Irrigated (n=100)	Rain-fed (n=100)
Illiterate	26	29
Primary school	4	9
Middle school	16	11
High school	20	7
12 <sup>th</sup> standard	18	12
Graduate & above	16	32
<b>Total</b>	100	100
<b>Educational Security Index</b>	<b>0.496</b>	<b>0.52</b>

*Source: Computed from field survey 2016-17*

In the study area, based on the educational level of the farmers, an educational index was calculated. It was found to be more under rain-fed situation (0.52 which means 32 farmers had education up to university level) compared to irrigated situation (0.50 which means 16 farmers had education up to university level). Not all the sample farmers have access to primary school, high school and college. Further, irrigated area farmers are having better accessibility to educational institutions than the rain-fed farmers is due to the fact that, irrigated area farmers have resources to send their children to private schools and colleges. But majority of the rain-fed area farmers send their children to

Government schools and colleges which are relatively far off.

#### Social Security

The social security refers to the capacity of the individuals to maintain and participated in the social networks that enable them to pursue sustainable livelihood by reducing risks, accessing resources and information. Social network is nothing but the level of participation by the farmers in organizations like Panchayat, Co-operatives, Self Help Groups and other organizations. Access to support from friends/neighborhood and access to social network elements like phone and television is another factor which determines the social network status of households.

**Table 3.** Social Security Status of farmers

Particulars	Irrigated (n=100)	Rain-fed (n=100)
Access to support from friends/ neighborhood	6	12
Access to phone	55	64
Access to TV	32	20
Member at village level/block level	7	4
<b>Social Security Index</b>	<b>0.466</b>	<b>0.386</b>

*Source: Computed from field survey 2016-17*

The analysis of social network status of farmers revealed that, participation in gram panchayat elections was higher under irrigated situation compared to rain-fed situation. And also 7 per cent of the irrigated area farmers were members at village level/block level than 4 per cent of rain-fed area farmers. 55 per cent of the farm households under irrigated and 65 per cent under rainfed situations were having phone. 32 cent of the farm households under irrigated situation had access to televisions and about 20 per cent of the farm households under rain-fed situation had access to television. Based on the level of participation in social organizations and access to social media like television and phone, an

index of social network status was worked out the index was more in irrigated situation (0.47 which means that most of the households participated in/had access to more than two of the social networks) than rain-fed situation (0.39 which means that most of the households participated in/ had access to more than one of the social networks).

#### Household Livelihood Security Index

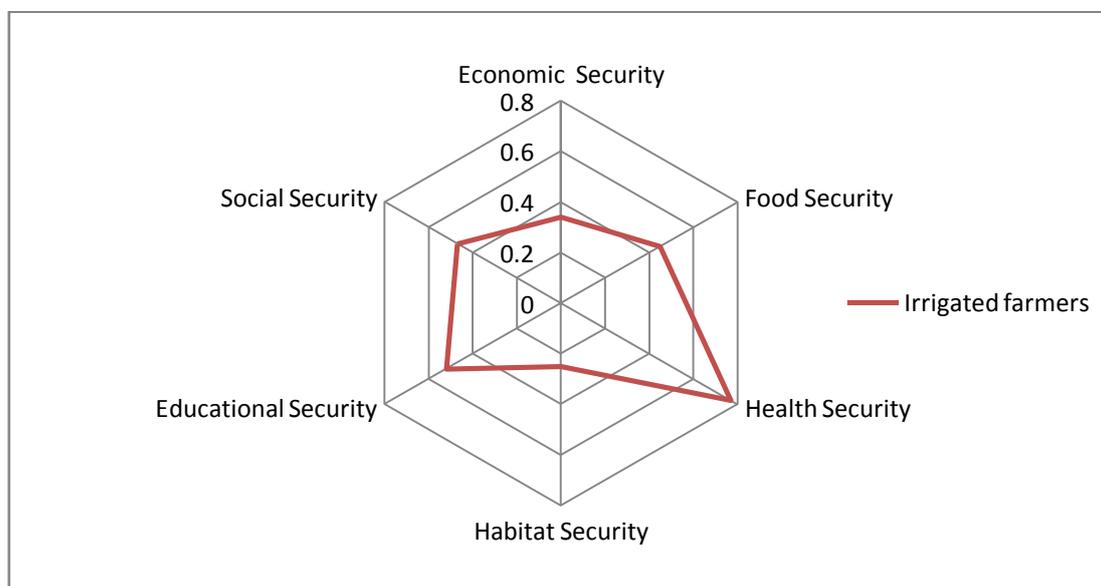
Household livelihood security index includes six livelihood security domains such as economic security, Food Security, Health security, Habitat security, educational security and social security. The composite overall Livelihood Security Index (LSI) for the household was calculated.

**Table 4.** Household Livelihood Security

Indicators	Indices	
	Irrigated	Rain-fed
Economic Security	0.34	0.21
Food Security	0.45	0.38
Health Security	0.77	0.61
Habitat Security	0.25	0.21
Educational Security	0.52	0.50
Social Security	0.47	0.39
<b>Household Livelihood Security Index</b>	<b>0.47</b>	<b>0.38</b>

*Source:* Computed from field survey 2016-17

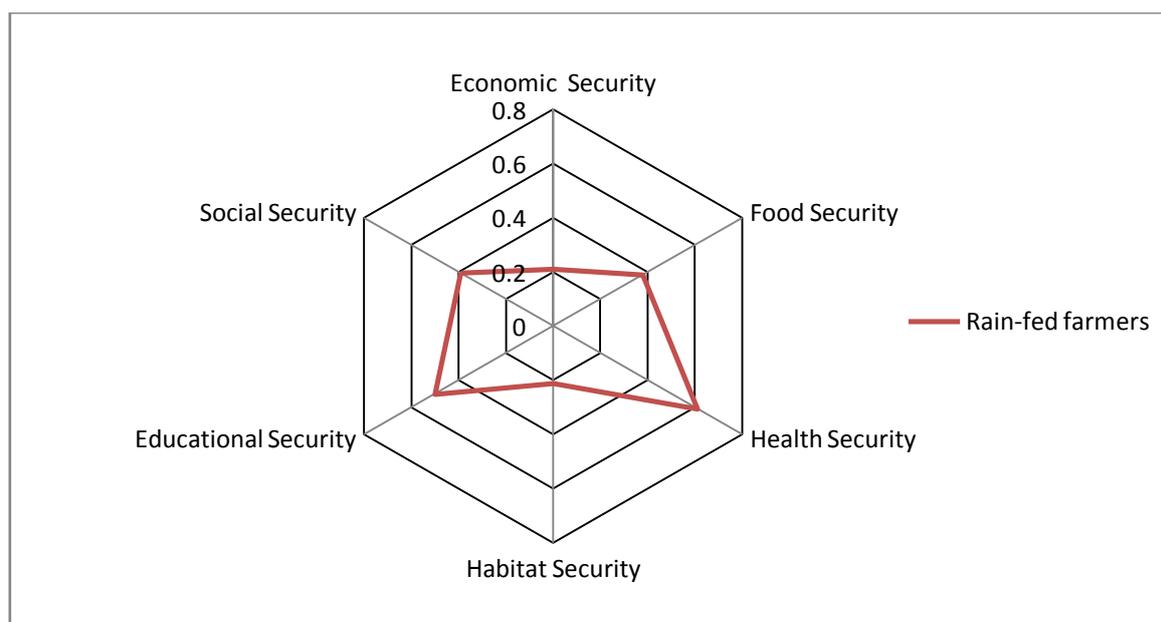
In the present research, the overall livelihood security index of irrigated farmers was 0.47 and livelihood security index of rain-fed farmers was 0.38.



**Figure 1.** Livelihood Security Status of irrigated farmers

The results of livelihood Security Status of irrigated farmers are summarized in Fig:1. The livelihood security index spider diagram ranges between 0 and 0.8. It shows the significant difference among the six livelihood indices. Habitat Security of irrigated farmers is stood in a comparatively very lower position followed by economic security. Food and

Social security scored relatively same value and moderate level. Health security and Educational Security scored a higher value and confirmed a higher level of security. Among these livelihood security index health security was indicated best level in the study area.



**Figure 2.** Livelihood Security Status of rain-fed farmers

The results of livelihood Security Status of rain-fed farmers are summarized in Fig:2. The livelihood security index spider diagram ranges between 0 and 0.7. It shows the significant difference among the six livelihood indices. Habitat Security and Economic Security of irrigated farmers is stood in a comparatively very lower position. Food and Social security scored relatively same value and moderate level. Health security and Educational Security scored a higher value and confirmed a higher level of security. Among these livelihood security index health security was indicated best level in the study area.

### CONCLUSION AND RECOMMENDATION

The study was set out to explore the livelihood security of farmers in the Varanasi and Sonbhadra district of Uttar Pradesh. The socio-economic status of the farmers and their livelihood status were a vulnerable situation in both the district. Particularly, economic security and habitat security status are in highly vulnerable situation for rain-fed farmers compare to irrigated farmers. This confirmed that around 53 % of the irrigated farmers and around 62 % of the rain-fed farmers were in livelihood insecurity status in the study area. Livelihood diversification is one of the ways to enhance the livelihood security of farmers. Lack of understanding about well-established patterns of livelihood and lack of diversified livelihoods were reported by the

majority of farmers in the study area. Government can organize training on diversified livelihood activities.

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