

*Full Length Research Paper*

# **A regional analysis of food security in Bundelkhand region (Uttar Pradesh, India)**

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**In the present study the authors have attempted to analyse the condition of food security in the Bundelkhand region of Uttar Pradesh at district level. Bundelkhand region has been chosen as a unit of study because it is one of the poorest regions in comparison with western, central and eastern regions of the state and even after being in close proximity to heartland of green revolution (Punjab, Haryana and Western Uttar Pradesh) the region is still backward in agricultural development in India in general. Agriculture is the mainstay of the economy and mostly dependent on monsoonal rainfall. The Bundelkhand is continuously facing drought since last few years and people are migrating for employment. Thus, there is an urgent need to look after the conditions of food security of the people living in this region. The standard statistical techniques have been used for the analysis of data. The study concludes that the condition of food security is unfavourable. Only one district of Jalaun has shown high food security. Majority of the districts are moderate and low food secure because of low food grain availability, low purchasing power of the people, etc. The irrigation facilities are also not well developed leading to low consumption of fertilizer and low productivity of crops. Employment rate, rate of urbanization, storage capacity and number of fair prices shops are also not satisfactory leading to pitiable food security condition in the study area.**

**Key words:** Food availability, food stability, food accessibility, food security, Bundelkhand.

## **INTRODUCTION**

Food security is the most heated and debated topic and in this context policy makers, planners, researchers and decision makers all over the world have been exploring ways and means to ensure food security to the millions of citizen (Tripathy et al., 2011). A family is said to be food secure when it has physical, economic and social access to the required amount of food grains in terms of quantity, quality, safety, (Sharma and Sharma, 2008), the food available should be culturally acceptable and when it is not at undue risk of losing such access (Mishra et al., 2008).

The problem of food insecurity is prevalent all over the world but it is more common in developing countries like India which produces surplus food on one extreme but at the other extreme one third of the population is extremely

poor and one half of the children are malnourished in one way or the other (Kannan et al., 2000). India has achieved a fourth fold increase in food grains from 50 million tonnes in 1950 to 219.3 million tonnes in 2007 to 2008 against a threefold increase in population from 33 million to more than 100 million (Kumar, 2010).

In terms of food factors, the concept of food security basically stands on three pillars, food availability, which deals with the domestic production of food grains in the area; food stability, which deals with the constancy in the availability of food in an area or to make the food available either through import from the surplus areas or by maintaining buffer stock at micro level at the time of manmade or natural disaster and harmful seasonal stability, and finally accessibility; which depends on the physical and economic access to food, guided by the purchasing power and per capita income of the people. It is of utmost importance because availability of food will be of no use, until and unless people have means to buy the available food (Chaturvedi, 1997; Grish, 1997;

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Jain, 1997; Ghosh, 2000).

## LITERATURE REVIEW

Burke (1989) examined that, in case of Eastern Uttar Pradesh the productivity is low because there is acute pressure of rural population on the agricultural land, low per capita income and use of old agricultural implements. She further opines that, Uttar Pradesh will face acute shortage of rice and pulses in future, which constitute main diet of majority of the people and to overcome this problem one has to increase the irrigation potential of the agricultural backward areas and to increase the yield by applying modern inputs.

Alexandratos (1991) in his study opines that food security in terms of per capita availability of food is increasing around the world. But this improvement is uneven and there are many countries which are unable to contribute in such progress. The food security condition in some of the countries today is worse than it was 20 years before.

The malfunctioning of economic development is responsible for the poverty and food insecurity. Swaminathan (2001) opines that India has achieved satisfactory progress on the production side but in spite of this food insecurity is very common at the household level and poverty is the root cause behind this insecurity. He opines that the availability is not the problem but the accessibility to the available food is the main problem so, the new agriculture should aim to provide not only more and more food but also some employment opportunities in the farm and non-farm sector so that people gain some income to access the food.

Gorton et al. (2009) has discussed about various economic, physical and socio-cultural factors related to food security. They opine that a low level of education is associated with reduced food security. People living in urban areas as compared to their rural counterparts are more likely to experience food security. Further speaking about transport they say that lack of transport to undertake food shopping has been linked with food security in many studies.

Ubong et al. (2009) in their article says that, Nigeria is the 10<sup>th</sup> most populous state, 6<sup>th</sup> largest petroleum exporting country with 50% of its land area cultivable in spite of this Nigeria is unable to feed its population. A new approach of agricultural education has been canvassed and is therefore suggested that agricultural science should be made one of the core courses at the junior secondary level so as to give young people an early orientation on the role of agriculture not only in food security but in national, economic and social development. The problem of food security has attracted many scientists and has given voluminous and diverse literature in the problem from different perspectives.

Some of the important contributors are Acharya (1983), Mohammad (1978 and 1995), Swaminathan (1996 and

2001), Kravdal (2001) and Anderson (2009).

## Study area

Bundelkhand has been in the news for all unfortunate reasons. Since many years, this region has been facing drought. Due to the moneylender's trap, the farmers are committing suicides, selling their land, cattle and even their wives (Singh, 2010).

The annual precipitation is low (600 to 1400 mm) and often erratic coupled with shorter duration which eventually makes the larger part of the region drought-prone with limited agricultural production. Soils exhibit great variation ranging from highly impoverished, shallow and low water retentive red soils to highly productive, deep and good water retentive black soil, unlike the soil in other regions of Uttar Pradesh. If it does not rain at the right time with consistency, the drought-related distress affects the masses. The irrigation facilities are a total disaster and no one seems to care. Unemployment is common and people are migrating in search of job. Keeping all these points in view, the authors have selected Bundelkhand region of Uttar Pradesh to provide an in-depth and detailed assessment about the condition of food security in the area.

Administratively, Bundelkhand region of Uttar Pradesh (herein called as UP-Bundelkhand) comprises 48 blocks under the jurisdiction of 7 districts (Figure 1). The geographical area of the UP-Bundelkhand is 2.94 million hectare which is about 12.21% of that state. Depending upon the economic considerations and infrastructure development, UP-Bundelkhand is the poorest region in comparison with western, central and eastern regions of the state. UP-Bundelkhand has only 4.96% of the state's population.

## Objectives

The objectives of the present study are to find out the spatial pattern of food availability, food stability and food accessibility and henceforth determine the food security in UP Bundelkhand and also to examine the interrelationship between the indicators of food security. Finally, some measures and suggestions have been provided to improvement of food security in the study area.

## DATABASE AND METHODOLOGY

The present study is based on the secondary sources of data to assess food security (Table 1) at district level obtained from the bulletin of agricultural statistics of Uttar Pradesh for various years, published by the directorate, ministry of agriculture, department of statistics and economics, Lucknow, Uttar Pradesh.

Food availability has been worked out at district level by taking three years moving average of agricultural produce to remove the weather abnormality and fluctuation in the data from 2006 to 2007

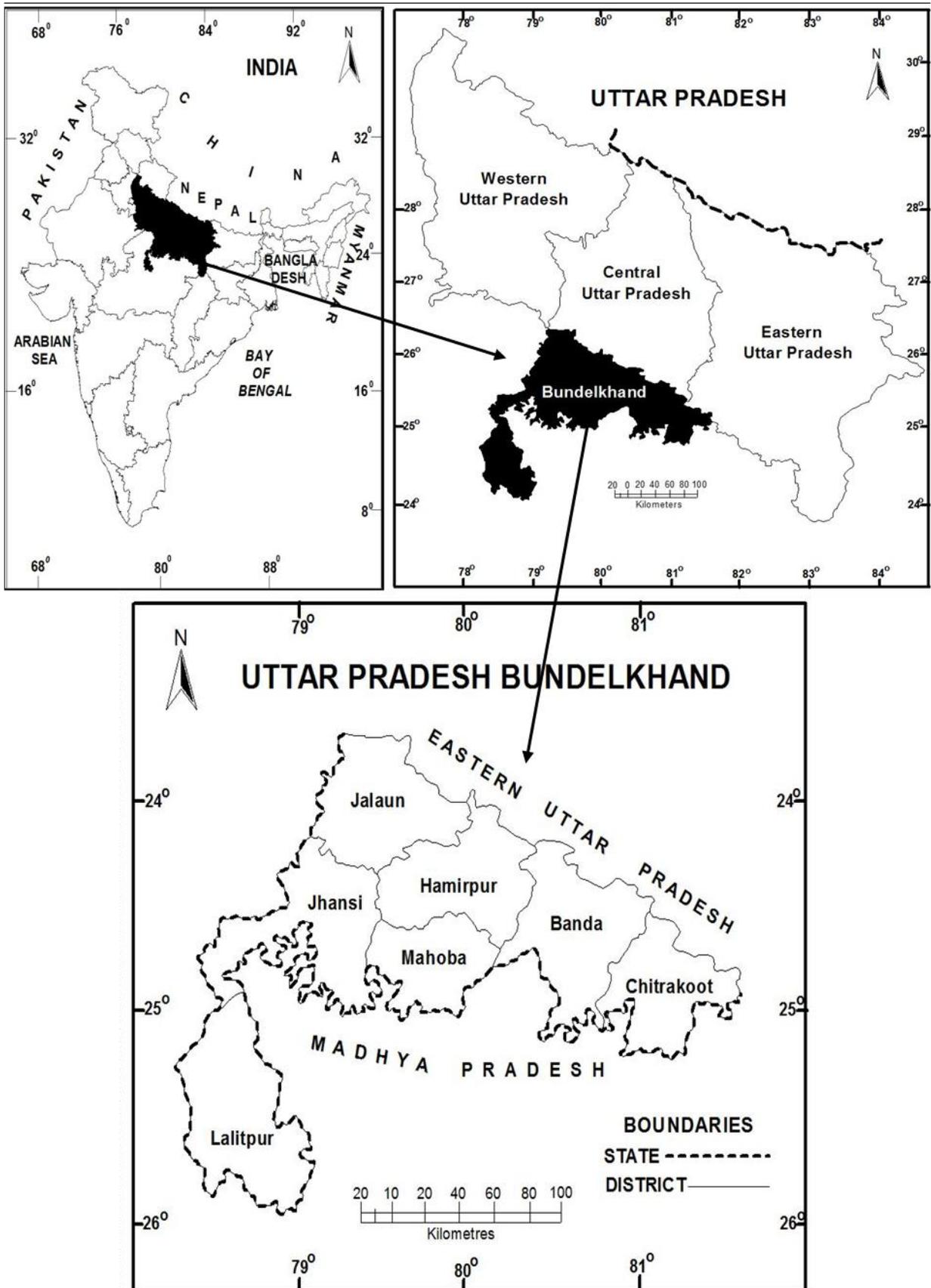


Figure 1. Location of Uttar Pradesh Bundelkhand Region in India.

**Table 1.** Variables of food security in Bundelkhand region.

S/ N	Description of indicators
<b>Food availability</b>	
1	Production of food grains (kg./head/annum)
2	Calorie Availability per head per day
3	Population per livestock
<b>Food stability</b>	
4	Fertilizer consumption (kg per hectare)
5	Percentage of gross irrigated area to net sown area
6	Storage capacity per 1000 population (in quintals)
7	Ration shop per Lakh population
8	Yield of food grains (kg per hectare)
<b>Food accessibility</b>	
9	Employment rate (percentage of main workers to total population)
10	Literacy rate
11	Length of roads per Lakh population (in kms)
12	Urbanization (percentage of urban population to total population)
13	Per capita income (in Rs)

and 2008 to 2009. The food availability, the variables that have been included are cereals and pulses (food grains) but for the calories per head per annum along with the food grains, the production of sugar, oilseeds, potato and onion for each district have also been incorporated.

There are many factors which affect the amount of food consumed, for example age, sex, occupation, income level, rural versus urban population, vegetarian and non vegetarian diet, body size, climate and for most of these the usable data is not available. The food consumed by a child and an adult is different. Similarly food consumed by a male and a female, normal and pregnant women, person working in fields and office is not similar.

According to Singh's scale each unit of population is equal to 0.773 consumption units or 1000 person equals to 773 consumption units (Chakravarty, 1970). All the food grains produced are not available in the same amount for consumption. There are many sources of leakage between the production and consumption of food grains e.g. losses in storage and transport, destruction by insects and pests, kitchen waste, use of seeds etc but the exact data is not available for all these losses.

After examining various estimates of losses given by different scholars, Chakravarty (1970) has suggested a total deduction of about 16.8% of the total gross production for obtaining net food available for consumption. The coefficient of production is therefore, 0.832 (100-16.8=83.2).

After calculating the net availability of food grains it has been converted into calorific values. As the nature of all the crops vary, so the calorie content per unit of crop is different. Therefore all the crops taken under study have been converted into calorific value separately with the help of the conversion table and have been added together to get the food production in calories for each district. Then the calories available for consumption are divided by total consumption unit to get calorie availability per head per annum and then further divide by 365 days to get calorie availability per head per day.

The data regarding the variables of accessibility and district wise population for the year 2008 has been projected using the analytic method of population estimation (Khan, 1998). The formula

assumes, that the population has been increasing at a constant rate, observed during the census period that is 1991 to 2001, thus;

$$PP = P_1 + n/N * (P_2 - P_1)$$

Where PP is the projected population;  $P_1$  is the population of the previous census;  $P_2$  is the population of succeeding census; N is the number of years between the censuses; n is the number of years between the previous census and the year for which population would be projected.

In order to standardize the raw data of all the variables, the method of z-score has been used (Smith, 1973). Z-score quantify the departure of individual observations, expressed in a comparable form. The formula is thus;

$$Z_i = \frac{x_i - \bar{x}_i}{S D}$$

Where,  $Z_i$  is the standard score of the  $i$ th variable;  $x_i$  is the original value of individual observation;  $\bar{x}_i$  is the mean of variable and SD stands for the standard deviation. In first step district wise Z-score of each indicator is calculated. The values so obtained are added district wise and average is taken to calculate the composite Z-score as the index of development, by the formula;

$$CS = \frac{\sum Z_{ij}}{N}$$

Where, CS refers to composite Z-score;  $Z_{ij}$  stands for the sum of Z-score of variable  $j$  in observation  $i$ ; and N symbolize the number of variables. Correlation matrix based on Karl Pearson's Technique has been used to examine the relationship between the variables of food Availability, Stability and Accessibility. Student's 't' test

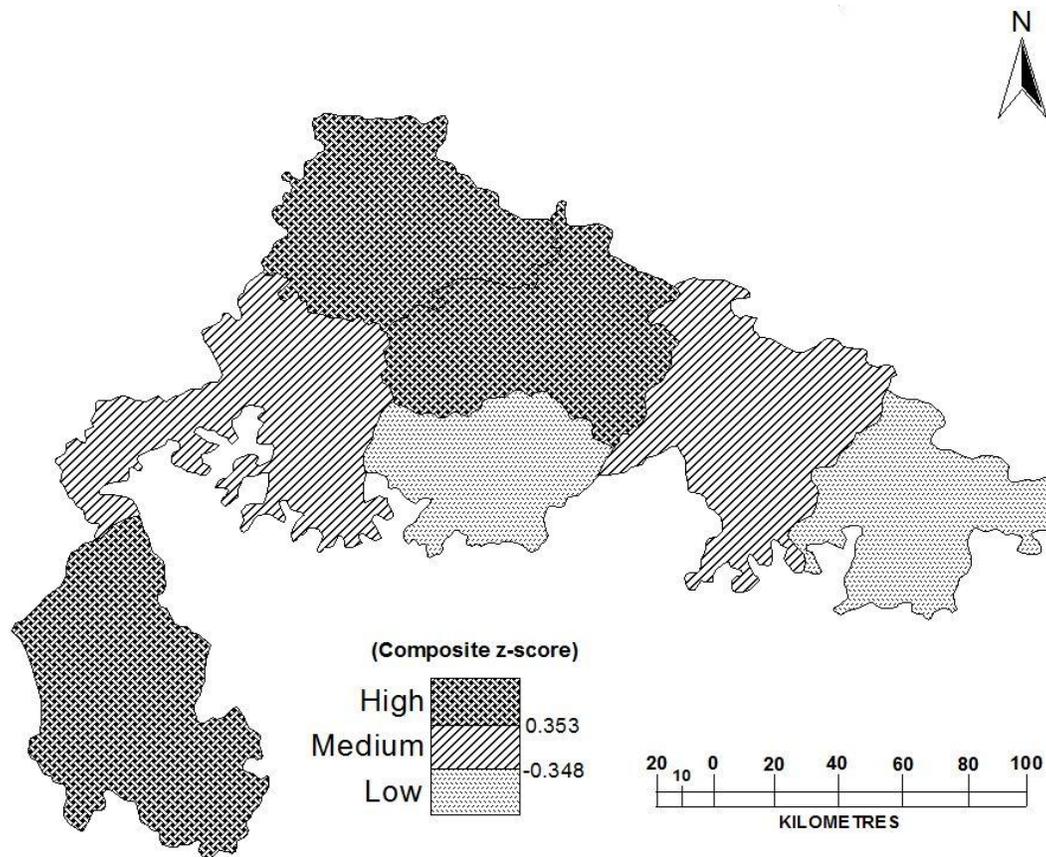


Figure 2. Uttar Pradesh Bundelkhand food availability regions, 2008.

technique has been chosen to identify the level of significance at 0.01 and 0.05 of their correlation.

## RESULTS AND DISCUSSION

### Food availability regions

Food security of any region mainly depends on food availability which is a function of domestic agricultural production or through imports from surplus areas. To examine the overall scenario of food availability in UP Bundelkhand for the year 2008 the variables taken are; food grain availability (kg per head per annum), calorie availability (calorie per head per day) and livestock availability (population per livestock) (Table 1).

The standard z-scores have been obtained for the all the variables of food availability separately. With the help of z-scores, the composite z-scores have been calculated in order to delineate the food availability region at district level. The districts of the study area have been divided into three categories of high, medium and low food availability on the basis of mean and standard deviation method. Figure 2 highlight that three districts of Jalaun, Lalitpur and Hamirpur are having high availability of food.

Due to well coverage of canals, high consumption of fertilizer and high yield, the food grain availability and calorie availability is higher in these districts. Availability of livestock is also high which has made these districts a high food available region. In spite of drought condition the availability of live stock is high because here animal husbandry is an integral part of the rural economy. Considerable progress has been made in recent years in improving the live stock through breeding, culling undesirable animal and upgrading indigenous cattle with improved bulls of well known tried India breeds and distribution of seeds of improved varieties of fodder.

District of Jhansi and Banda have moderate availability of food. Though the food grain and calorie availability is low but livestock availability is high because of drought and migration. It is often said that there is more livestock than human population in UP Bundelkhand. People from Jhansi and Banda are migrating because of drought after selling their livestock to people who are still residing and this is the reason why the availability of livestock per head is greater. It is also possible that, due to Hindu reverence for cows and buffalos UP Bundelkhand has high livestock population.

The agricultural development of the district Banda is not up to the standard and the hilly topography of the

**Table 2.** Food Availability, food Stability and Food Accessibility with Indicators in Bundelkhand Region, 2008.

S/N	Districts	Food availability		Food stability					Food accessibility					
		Production of food grains in kg/h/annum	Calorie availability per head per day	Population per livestock	Consumption of fertilizers (kg/ha)	% of gross irrigated Area to net sown area	Storage capacity per 1000 population (in quintal)	Number of fair prices shops (per Lakh population)	Yield of Food grains (kg/ha)	Employment Rate (percentage of main workers to total population)	Literacy rate	Road per Lakh population (In km)	Urbanization (percentage of urban population to total population)	Per capita income (In Rs)
1	Jhansi	219.96	2324	2.54	62.52	64.11	298	38	1305.78	25.03	61.67	99.36	41.39	27602
2	Lalitpur	374.99	3863	1.50	34.22	65.48	262	61	1162.34	29.90	45.86	118.60	14.74	22899
3	Jalaun	338.39	3849	2.04	61.87	80.47	727	58	1612.55	60.57	60.57	134.09	24.12	28461
4	Hamirpur	270.50	3730	1.98	29.29	45.04	196	43	1040.78	20.31	51.23	134.61	17.28	47043
5	Mahoba	203.64	3171	1.57	31.60	24.04	329	55	712.49	31.09	54.64	161.49	22.70	27195
6	Banda	225.58	2372	2.06	31.49	54.07	415	38	1004.86	21.83	49.35	96.57	16.69	23135
7	Chitrakut	173.83	1836	1.42	43.76	25.52	14	64	848.21	26.70	66.21	108.88	10.07	19492

Source: Directorate, Ministry of Agriculture, Department of Statistics and Economics, Lucknow, U.P., Census of India, 1991 and Census of India, 2001.

district Jhansi does not permit large scale farming and cultivation of land under improved agricultural practices. This is the reason why the availability of food is moderate. Mahoba and Chitrakoot have low food availability. Though the calories available for consumption are higher (because of inclusion of onion, potato, oilseeds and sugar) but low availability of food grains and livestock has made these districts to fall in the low category of food availability. These districts are also under the curse of droughts for past few years and this is the main reason for low food availability in these districts of study area. But at aggregate level the data shows that the food availability condition largely of food grains availability of UP Bundelkhand is good. This is because of NFSM (National Food Security Mission) which aimed to increase production (especially for pulses which is suitable for dry land farming) through area expansion and productivity also creating employment opportunities and enhancing the farm-level economy to restore confidence of farmers

### Food stability regions

The dimension of stability is influenced by the sustainability of the food system which minimizes the chances of risks related to food insecurity in normal and as well as in difficult times by ensuring the food consumption at a required level (Tripathy, 2011).

Food stability calls for undertaking appropriate pre-emptive steps through which harmful, suspended and inter-annual instability of supplies of food can be reduced. The regional pattern of food stability has been examined on the basis of variables of yield per hectare, percentage of gross irrigated area to net sown area, storage capacity per thousand of population in quintals and ration shops per lakh population, and then composite z-score has been calculated out as shown in (Table 3). On the basis of composite z-scores of the indicators of food stability (Table 4), it can be viewed that, very high level of food stability is found only in one district of study area that is,

Jalaun (Figure 3).

Due to the development in the infrastructure of agriculture that is increased consumption of fertilizer and area under irrigation the yield per unit of land in these districts has increased. Storage capacity is highest in district of Jalaun. In other words we can say that the concentration of all variables of food stability was high except ration shop per lakh of population.

Districts of Jhansi, Lalitpur and Banda are having moderate food stability. Though irrigational facilities, consumption of fertilizer and yield of food grain is adequate on one extreme but storage capacity and ration shops for the distribution of food grain is low, keeping these districts into moderate category of food stability. Chitrakoot, Hamirpur and Mahoba have low food stability because concentration of almost all the variables of food stability was low in these districts.

The storage capacity of these districts is low thus; they are unable to maintain stability in food supply even at the time of shortage. The farmers

**Table 3.** Food availability, food stability and food accessibility with indicators (in z-score) in Bundelkhand Region (2008).

S/N	Districts	Food availability			Food stability				Food accessibility					
		Production of food grains in kg/h/annum	Calorie availability per head per day	Population per Livestock	Consumption of Fertilizers (kg/ha)	% of Gross irrigated area to net sown area	Storage capacity per 1000 population (In Quintal)	No. of fair prices shops (Per Lakh population)	Yield of food grains (kg/ha)	Employment rate (percentage of main workers to total population)	Literacy rate	Road per Lakh Population (In km)	Urbanization (percentage of urban population to total population)	Per capita income
1	Jhansi	-0.516	-0.830	1.675	1.409	0.609	-0.101	-1.202	0.695	-0.419	0.815	-0.977	2.007	-0.041
2	Lalitpur	1.580	1.003	-0.925	-0.544	0.675	-0.269	0.922	0.215	-0.064	-1.325	-0.144	-0.616	-0.564
3	Jalaun	1.085	0.986	0.425	1.364	1.385	1.858	0.607	1.723	2.173	0.666	0.526	0.307	0.054
4	Hamirpur	0.167	0.844	0.275	-0.885	-0.294	-0.567	-0.700	-0.192	-0.764	-0.598	0.548	-0.366	2.119
5	Mahoba	-0.737	0.179	-0.750	-0.725	-1.290	0.042	0.378	-1.291	0.023	-0.137	1.710	0.168	-0.087
6	Banda	-0.440	-0.772	0.475	-0.733	0.134	0.435	-1.165	-0.312	-0.653	-0.853	-1.097	-0.424	-0.538
7	Chitrakut	-1.139	-1.411	-1.125	0.114	-1.219	-1.397	1.162	-0.837	-0.297	1.429	-0.565	-1.076	-0.943

**Table 4.** Districtwise food availability, food stability, food accessibility and food security by composite z-score, 2008

S/N	Districts	Food availability (composite z-score)	Food stability (composite z-score)	Food accessibility (composite z-score)	Food security (composite z-score)
1	Jhansi	0.110	0.282	0.277	0.223
2	Lalitpur	0.552	0.200	-0.543	0.070
3	Jalaun	0.832	1.387	0.745	0.988
4	Hamirpur	0.429	-0.528	0.188	0.030
5	Mahoba	-0.436	-0.577	0.335	-0.226
6	Banda	-0.246	-0.328	-0.713	-0.429
7	Chitrakut	-1.225	-0.436	-0.290	-0.650

<sup>1</sup> Calculation based on Table 3.

in these districts are still backward and have inappropriate knowledge about the modern agricultural technology like modern means of irrigation. The most recent data available from Government of India shows that, in the study area the percentage of total irrigated area under food grains is 48.72 %, which is far below than that of state average of 74.81%. If we look district wise

then it becomes evident that the percentage of total irrigated area in the districts of Chitrakoot, Hamirpur and Mahoba is lowest at 25.6, 33.6 and 38.4%, respectively.

Agriculture in study area is dependent on rainfall but due to its erratic nature, the irrigation and productivity of crops has reduced to minimum. The adequate amount of rainfall required for

districts Chitrakoot, Hamirpur and Mahoba is 945, 851 and 940 mm, respectively but rainfall has deviated from the normal by -60, -50 and -66%, respectively.

Consumption of chemical fertilizer is lowest and area under food grains has continuously declined during last decade. Thus, they are unable to increase the production and productivity of food

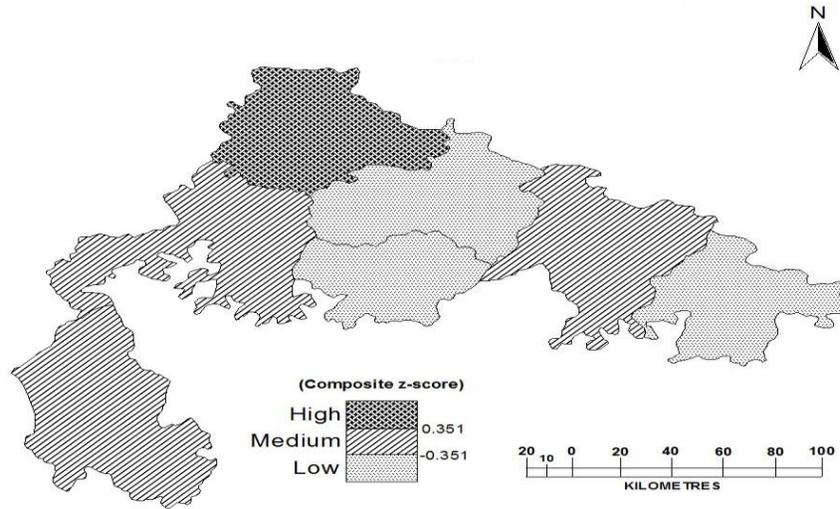


Figure 3. Uttar Pradesh Bundelkhand food stability regions, 2008.

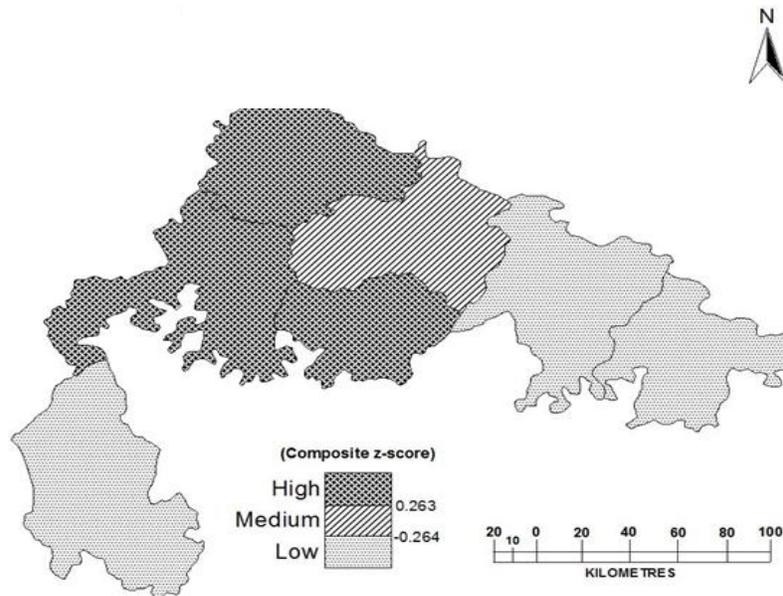


Figure 4. Uttar Pradesh Bundelkhand food accessibility regions, 2008.

grains on the existing agricultural land. On the other hand, public distribution system (PDS), which was launched with the objective to provide food security to the needy and poor in India, does not have a growing curve in Bundelkhand and the number of fair prices shops are still low per unit of population.

**Food accessibility regions**

The availability and stability of food would loose its meaning until the people have access to the available

food. The food accessibility in Up Bundelkhand has been assessed on the basis of employment rate, literacy rate, length of Pukka/metalled road per lakh population in kilometres, percentage of urban population and per capita income.

The district wise distributional pattern shows that two districts of Jalaun and Jhansi have high food accessibility (Figure 4). The proportion of urban population and literacy rate is much higher in these districts and literacy is usually seen to have a high correlation with employment, providing better access to food. Also, the good network of the roads in these districts enable the

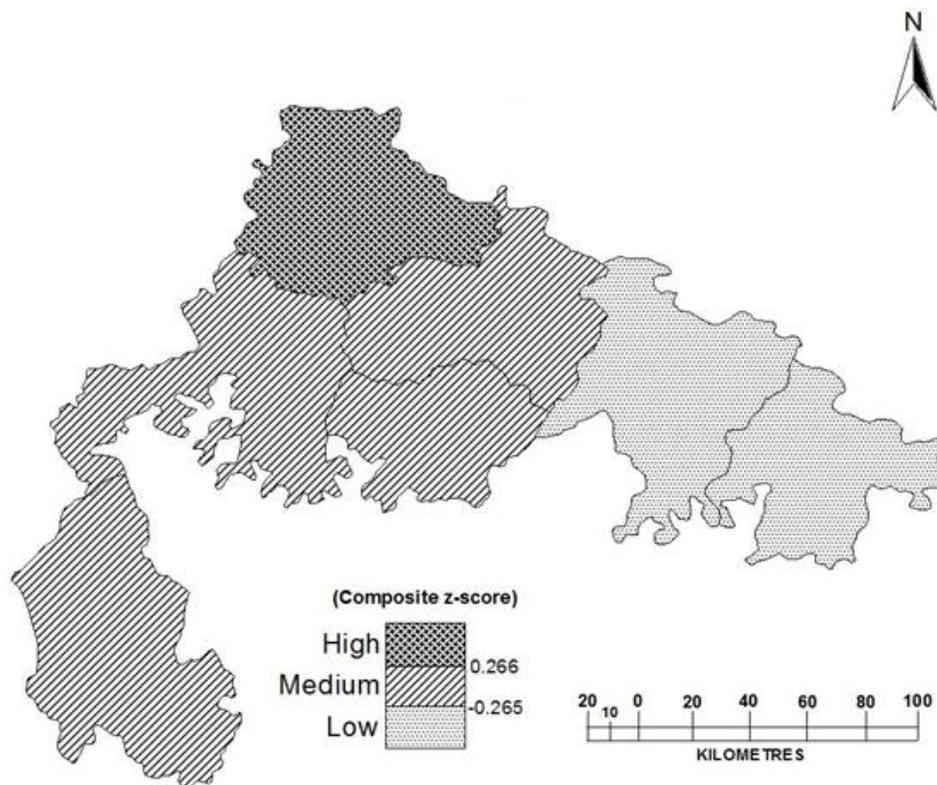


Figure 5. Uttar Pradesh Bundelkhand food security regions 2008.

farmers to have an easy access to the agricultural inputs and better delivery and marketing of the agricultural produce to make the food available to the needy at right time.

The per capita income of people in these two districts is also high leading to better purchasing power of the people. District Hamirpur is the only district having moderate food accessibility. District of Chitrakoot Lalitpur and Banda are showing low food accessibility. Employment rate and urbanization is low leading to low purchasing power of the people which leads to low accessibility of food. Though, the people are literate but the employment facilities and job opportunities are short and unemployment is common. Despite the hype over NREGA (National Rural Employment Guarantee Act) Scheme, it has been found that 52% of the poor and needy households in the backward region of these districts did not get a single day of NREGA employment.

The majority of households in most parts of Bundelkhand rely on income from local or inter-state, annual or seasonal migration for employment. Till the end of year 2008 there were only two large manufacturing units in the entire region. No small or cottage industry in the region commanded a large market outside. The potential of tourism has not been well realized yet and services industry is limited to few pockets.

Urbanization is also low in these districts leading to

reduced amount of urban facilities related to health and other infra structure facilities which are essential for improving the accessibility of food for population. Bundelkhand is still backward in urban facilities and infrastructure. Poverty and illiteracy is acute and also the main cause of food insecurity. For making the accessibility of food easier for the population, educational facilities should be provided. Higher literacy will provide better employment opportunities, which in turn will lead to the better purchasing power and access to food.

### Food security regions

The study clearly shows that there are differences in the level of food availability, food stability and food accessibility among the districts of the study area. In order to bring out the whole picture of food security the z-scores of all thirteen variables, three of food availability, five of food stability and five of food accessibility were taken district wise (Table 3) and composite z-score for food security has been calculated (Table 4).

It becomes evident that the districts wise variation of z-score varies from maximum value of 0.988 in Jalaun to minimum value of -0.650 in Chitrakoot district of the study area. Only one district of Jalaun recorded high food security (Figure 5) because out of thirteen variables all

**Table 5.** Correlation matrix of indicators of food security.

Variables	Food availability	Food stability	Food accessibility	Food security
Food availability	1	0	0	0
Food stability	0.656	1	0	0
Food accessibility	0.368	0.483	1	0
Food security	0.851*	0.889**	0.706	1

\*Correlation significant at 5% level, \*\*Correlation significant at 1% level.

have contributed positively to food security. Availability of food and livestock and higher consumption of fertilizer with adequate irrigational facilities accompanied by higher productivity of the crops are responsible for high food security of this district. Purchasing power of the people and high employment are the main factors for the high level of food security in this district. Jhansi, Lalitpur, Hamirpur and Mahoba are showing moderate level of food security.

The z-score also reveals that out of thirteen variables seven has contributed positively in district of Jhansi, five in districts of Lalitpur and Hamirpur and six in Mahoba district. The development in the infrastructure of agriculture is highly required because the consumption of fertilizer and yield per hectare is low. Storage capacity and the number of fair prices shops should be increased to secure better access towards food. Remaining two districts of the study area namely, Banda and Chitrakoot have shown low food security and out of thirteen only three variables are recorded as positive.

### Relationship between the variables of food security

The inter correlation matrix (Table 5) exposes the causal relationship, among the variables of food security. The level of significance has also been tested on the basis of student's 't' test technique (Table 2). It can be inferred from Table 2 that food security is positively correlated with food availability ( $r=0.851$ ) and food stability ( $r=0.889$ ) at five and one percent level respectively.

However, it is positively correlated with food accessibility ( $r=0.706$ ) but it is not significant. It may be concluded from the analysis that food security of the region depends upon the food availability and stability. Food availability though insignificant, but positively correlates with food stability and accessibility. This shows that food stability and accessibility increases as much as food availability increases.

### CONCLUSION AND SUGGESTIONS

The study shows that, the condition of food security in UP Bundelkhand is very critical. The trio of food security that is, food availability, food stability and foods accessibility

is responsible for food insecurity condition in one way or other. Food security in the UP Bundelkhand is found to be positively correlated with food availability and food stability. Though not significant, but also positively correlate with food accessibility.

Irrigation and Drainage (I and D) sector in Uttar Pradesh had been in the forefront for more than a century and had been the vigour in transforming the 'India of Famines' to 'India with food security'. As is it also witnessed, that the success of green revolution in India has dependent on the area under assured irrigation facilities. Unfortunately, this sector has not been getting the kind of growth attention and budgetary support which other sectors and other regions are getting for the development of irrigation.

In Bundelkhand region about 46% of the net sown area is still unirrigated and depends on the impulses of monsoon which is unsure and inconsistent. A large part of this region is badly affected by the menace of distressing drought thus drought mitigation measures should also be taken on large scale and diesel subsidy should be provided to the farmers in drought or limited rainfall areas so that the farmers could save the standing crops in the field.

The storage capacity at community and household level should be developed to provide food to the needy at right time and also to avoid the exploitation of rural folks by middleman and traders. The availability of food grains at the government ration shops should be provided at subsidised rate and PDS (public distribution system) should be strengthened because an effective PDS can be the backbone of food availability to the consumers particularly the vulnerable sections of the society. The purchasing power of the people should be increased by providing them employment through various schemes under Government, related to construction of roads and development of irrigation facilities through NREGA (National Rural Employment Generation Act) and Pradhan Mantri Gram Sadak Yojna. Providing employment through Food for Work Programme (FWP), Integrated Rural Development Programme (IRDP) and through droughts control programmes like Drought Prone Area Programme (DPAP). Mass illiteracy prevails in the district of the study area, thus educational facilities should be provided to the people leading to employment and better access to food.

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