Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), vol 11, 2023
http://dx.doi.org/

Accessing the Food Security Component of Households in Dimapur, Nagaland

Acceso al componente de seguridad alimentaria de los hogares en Dimapur, Nagaland

Sunil Jaiswal[1], Prof. Subhash Anand[2], - Prof. Daljit Singh[3], Dr. Ushvinder Kaur[4], Dr. Rachna Dua[5], Prof. B. Lal[6],

1- Department of Geography, Delhi School of Economics, University of Delhi, Delhi-110007, India. Email: imsjaiswal07@gmail.com
2- Department of Geography, Delhi School of Economics, University of Delhi, Delhi-110007, India. Email: sanandpv@yahoo.co.in (Corresponding Author)
3- Department of Geography, SSN College (University of Delhi) Delhi-110036, India. Email: daljitchhiller@yahoo.com
4- Department of Geography, SSN College (University of Delhi) Delhi-110036, India. Email: ushvinder.kaur@gmail.com
5- Department of Geography, SPM College (University of Delhi) West Punjabi Bagh, Punjabi Bagh, Delhi, 110026, India. Email: rachnadua456@gmail.com
6- Department of Physics, SSN College, (University of Delhi) Delhi-110036, India. Email: daljitchhiller@yahoo.com

ABSTRACT

Green revolution had a great impact on the part of production and food availability. However, the famine issue didn't disappear and it was understood that basic reason was less supply of food but rather more the power of purchasing of explicit people social gatherings. In this study, food security components of households were accessed in small, medium and large family from a food basket to obtain the food security index by using both primary and secondary data of production and consumption pattern of Dimapur. The small size (≤4) family showed the maximum unsecured households of around 86 per cent, the medium size (5-7) family household holds around 50 per cent of secured and unsecured households whereas large size (≥8) family households were also unsecured with 50 per cent.

Keywords: Food Security, Availability, Accessibility, Utilization, Stability.

RESUMEN

La revolución verde tuvo un gran impacto por parte de la producción y disponibilidad de alimentos. Sin embargo, el problema de la hambruna no desapareció y se entendió que la razón básica era menos oferta de alimentos sino más bien el poder adquisitivo de personas explícitas en las reuniones sociales. En este estudio, se accedió a los componentes de seguridad alimentaria de los hogares en familias pequeñas, medianas y grandes de una canasta de alimentos para obtener el índice de seguridad alimentaria utilizando datos primarios y secundarios del patrón de producción y consumo de Dimapur. La familia de tamaño pequeño (<4) mostró el máximo de hogares no asegurados de alrededor del 86 por ciento, el hogar familiar de tamaño mediano (5-7) alberga

alrededor del 50 por ciento de los hogares asegurados y no asegurados, mientras que los hogares familiares de tamaño grande (>8) también fueron sin garantía con el 50 por ciento.

Palabras clave: Seguridad Alimentaria, Disponibilidad, Accesibilidad, Utilización, Estabilidad.

INTRODUCTION

The global food security will stay an overall worry for the following 50 years and beyond (Rosegrant and Cline, 2003). The total population is rising quickly over the development of food grains and as an outcome food crisis emerges (Ramsundar and Jaydeb, 2011). Food security comes in when all individuals continuously have social, physical and economic acceptance to nutritious, adequate and protected food to meet their food inclinations and dietary requirements for operating active and healthy life (Swaminathan, 2001). Soil health of an area also plays an important role in the development of food security which tells us about the nutrient's capacity in the area like Yamuna flood plains of Delhi (Jaiswal et al., 2019).

Kumar et al. (2017) has also evaluated the impact of climatic and non-climatic elements on manageable food security in India. Economic growth, earnings and urbanization have impacted dietary patterns with Dimapur faces many difficulties as its continued looking for food safety (Giribabu, 2021). Accepting that nutritious food is available and accessible, the family needs to choose how to plan and what food to buy it just as how to prepare and assign it within the household (Swaminathan, 2001). Naga people don't put much efforts into cattle development through artificial insemination using the high-quality insemination which give more productivity (Chale, 2018). Major observations of the study were to assess the food security and their components along with socio-economic characteristics of respondents.

People in Dimapur mostly prefer to have their regional food called the Naga food with the regional ingredients (Singh and Singh, 2007). The highlight of the Naga food with love for smoked meat, bamboo shoots, pumpkins flowers and seeds along with Bhut Jolokia (Krug et al., 2013). They also like to have either steamed or boiled rice, they have a good combo of both vegetarian and non-vegetarian food with chutney made up of fish or bamboo shoots or fermented soya beans mixed with tomatoes, salt and chilly (Jamir and Deb, 2014). Agricultural efficiency and rural communities food security where high population development prompts progressively more limited neglected periods and a revealed decrease in soil profitability (Krug et al., 2013). This study will also highlight the components of different households size in Dimapur which will help to know about the consumption and production pattern through primary and secondary data.

MATERIAL AND METHODS

Study area: Dimapur is the largest city of Nagaland and the only plain tract of hilly areas. Rapid growth of population since 1991 from 177951 with density of 192 person per sq. km to 378811 with density of 409 person per sq. km (Census of India, 2011). The altitude of district ranges from 160 - 350 meters above the mean

sea level. Dimapur is known for the commercial hub not as a capital of Nagaland but as a district and is the magnet around which the economic and developmental activities of the district are centered; it is one of the fastest developing townships of the North East. The town is also a gateway to Nagaland and Manipur state. It is important rail head and also has airport. The National Highway 39 that connects Kohima, Imphal and Myanmar border of Moreh runs through Dimapur District. Agriculture in Dimapur is rainfed. Dimapur district has warm humid climate, soil type is loamy to sandy loam mostly agricultural practices are concentrated in the jhum and plain areas of the district (Krug et al., 2013).

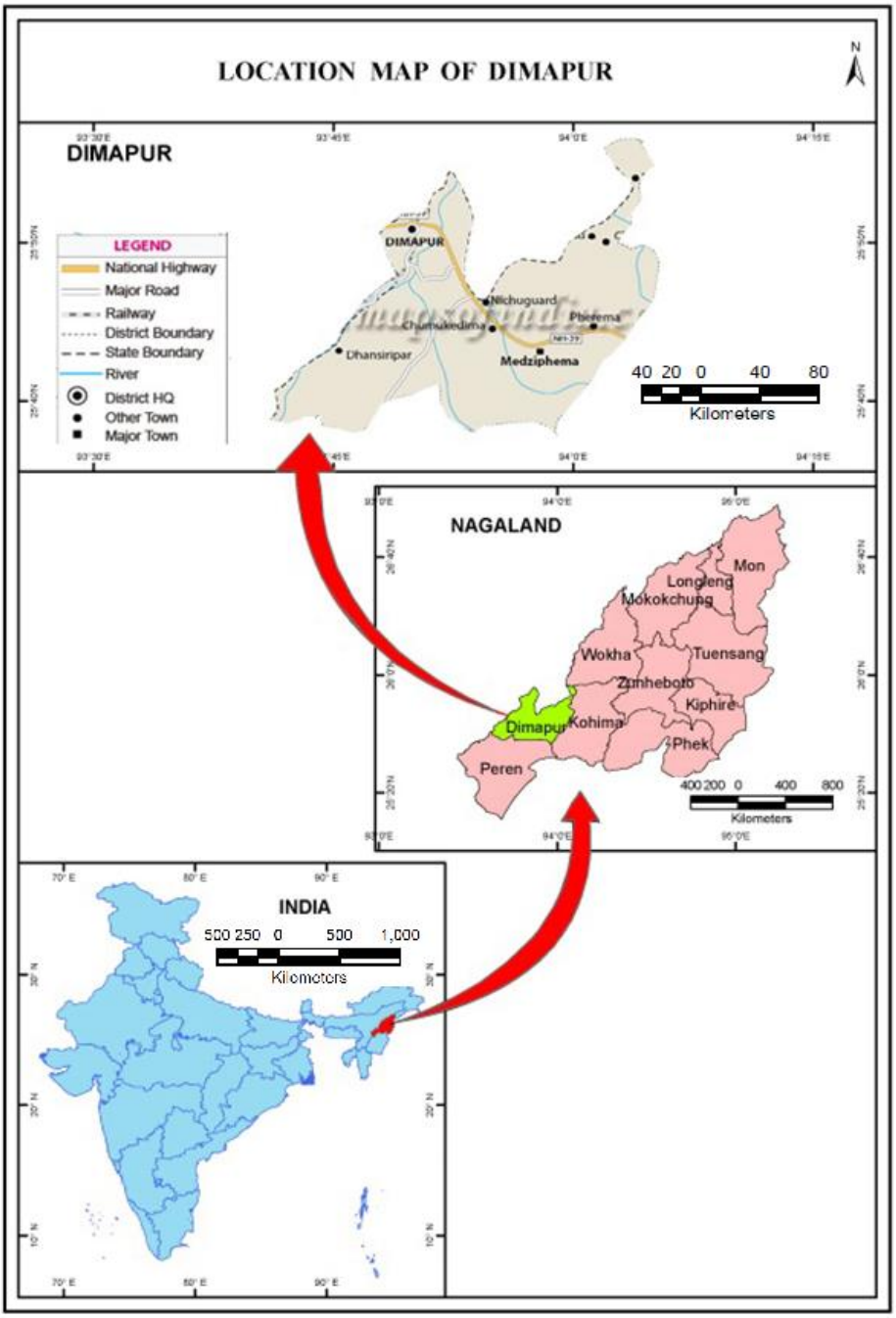

Figure: 1 Location Map of Dimapur. Source: Census of India (2011)

Data Source and Methodology: The objective of this chapter is to study about the food security components at the household level in which various date sources and data is used to fulfill this objective. The chapter include both primary and secondary data including statistical tools and techniques like regression, percentage, ratio and food security index.

Primary survey data based on February 2021 were also incorporated like meat consumptions in last 30 days, household income, household expenditure per month, situation-based food shortage in last 12 months and at last a food basket was created to find food security index. The survey of 125 respondents were done on monthly basis (based on survey February, 2021) but looking at the procedure and calculation to find out food security and its component, further the data were converted into weekly consumptions by the household individuals. All the data calculation were done manually in excel. For computing the score of relative attributes of different food security in Dimapur district, technique like Z-Score has been applied to compute the Standard score. Where,

$$Z_i = \frac{Xi - \bar{x}}{S.D}$$

Zi= Standard score for the i^{th} observation
Xi= Original value of the observation
$\bar{x}$= Mean for all the values of X
S.D= Standard Deviation of X

Food Security Index for Dimapur was obtained with identity of difference between minimum of one food insecurity components and minimum of two food security components. It was originated to have ground work analysis and categorize each family on the way to security of food (Sahu et al., 2017).

$$x_j^{FSI} = \text{Min}\,(z_j^{FCS}, z_j^{HDDS}) - \text{Max}\,(z_j^{HFIAS})$$

Where, x_j^{FSI} = Food Security Index of j^{th} household;

z_j^{FCS} is standard normal score of FCS;

z_j^{HDDS} is standard normal score of HDDS;

z_j^{HFIAS} is standard normal score of HFIAS.

The FCS (Food Consumption Score) is a particular sort of dietary weighted diversity index utilized fundamentally by the Program of World Food. In the present study, because of impediment of regular dietary variety and similar nutritional categories available in the district, FCS was determined according to family weekly food cost on various nutrition types during the seven days stretch of correspondence, and the outcome changed to standard normal structure.

$$x_j^{FCS} = \frac{1}{k_j}\sum_{i=1}^{m} e_{ij}$$

Where, x_j^{FCS} = Food Consumption Score of j^{th} household;

k_j= household size of j^{th} household for j=1,2,…,n;

Number of food groups i=1,2,….m;

e_{ij} is weekly expenses towards each ith food group incurred by jth household; and

z_j^{FCS} is the standard normal distributed variable of x_j^{FCS}.

The HDDS (Household Dietary Diversity Score) means that food items from financial access which need assets of family. Nutritional weighted significance on food categories was characterized as the opposite positioning of significance respondents like, higher position addresses weight of high and the other way around, and it was considered in light of the fact that comparative eating routine variety utilizing traditional strategy was normal in remote rural areas. At last, the changed scale to standard normal distribution (z component) mathematical and requirements of algebra.

$$x_j^{HDDS} = \frac{1}{k_j}\sum_{i=1}^{m} w_i f_{ij}$$

Where, x_j^{HDDS} = Household Diet Diversity Score of jth household in Dimapur district;

k_j= household size of jth household for j=1,2,…,n;

Number of food groups i=1, 2….m

w_i is weight assigned to each food group;

f_{ij} is amount/expense of different food group consumed by jth household and

z_j^{HDDS} is the standard normal distributed variable of x_j^{HDDS}.

In the present study, HFIAS was determined as just proportion of month-to-month food consumption to add up to income and the outcome changed to know the standard normal structure. Since the questions for Household Food Insecurity Access Scale was checked to be not effective in getting appropriate reaction from interviewee during review of pilot, the strategy for assessing the extent of use of food on the absolute income of family considering the "*propensity of individuals nearer to the edge of poverty when they spend a greater proportion of their income on food*" was acknowledged here.

$$x_j^{HJIAS} = \frac{\sum_{i=1}^{m} E_{ij}}{GI_i}$$

Where, x_j^{HFIAS} = Household Food Insecurity Access Scale of jth household;

k_j= household size of jth household for j=1,2,…,n;

Number of food groups i=1,2,….m;

E_{ij} is monthly expenses towards each ith food group incurred by jth household

GI_j is Gross Monthly Income (Rs.) of jth household

Z_j^{HFIAS} is the standard normal distributed variable of x_j^{HFIAS}.

4. Food security

Food security is very tough to quantify since it covers in wide range with the distribution, consumption, production and utilization of food. On the other hand, Food insecurity lends itself more for measurement and analysis. Rather should focus on that hunger and starvation and food security are not mixed up*: "Food security refers to the accessibility and availability of food though famine and hunger are the outcome of the non-availability of food, at the end of the day the consequences of food instability and food insecurity"* (Kumar et al., 2012). There are four components of food security they are availability, accessibility, stability and utilization (Maxwell, 1996).

4(a) Availability

Availability alludes to the physical food presence. At national level, availability of food is a mix of domestic production of food, business food exports and imports, food aids and local food stocks. At family level, food could be from own purchased or production from the nearby domestic markets. To produce the crops yield water resources are needed for the food production. Because of climate change and population growth, the tension on remains of natural resources and to be specific water and land increases (Patel, 2013). With a rise in clashes over water use resources which might be a danger for food security on long term.

Table: 1 Total cropped area in Dimapur and Nagaland for the Year 2010-19 (Hectare)

District	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Dimapur	74525 (16.47%)	79835 (16.83%)	79390 (16.25%)	82261 (16.47%)	80866 (16.17%)	82584 (16.39%)	83519 (16.02%)	85728 (16.17%)	87972 (16.23%)
Nagaland	452471	474339	488522	499311	500073	503743	521316	530102	542083

Source: Ministry of Agriculture and Farmers welfare, GOI (2010-19)

A comparison of total cropped area in Dimapur and Nagaland for the year 2010-19 is done. The change in the data over the years in Dimapur and Nagaland. In 2010-11 the total cropped area for Dimapur was 16.47 per cent of 452471 hectare in Nagaland. Similarly, the lowest total cropped area in Dimapur can be seen in 2016-17 with 16.02 per cent of 521316 hectare of Nagaland. The highest cropped area observed in 2011-12 in Dimapur which was 16.83 per cent of 474339 hectare (Table 1).

Table: 2 District wise Intensity of cropping (in percentage) in 2018-19

District	Cropped Area (Total)	Sown area (Net)	Cropping intensity (%)
Dimapur	87972	59452	148
Nagaland	540327	387134	140

Source: Computed by Researcher (2020)

The intensity of cropping in Nagaland of which Dimapur is 3rd among the districts with highest intensity of 148 per cent after Peren and Wokha (Table 2). Overall, the intensity in Nagaland is 140 per cent. Copping intensity calculation as under (Dayal, 1978):

$$\text{Calculation for Cropping intensity} = \frac{\text{Total cropped area}}{\text{Net sown area}} \times 100\%$$

The combined consumption data of beef, chicken, mutton and fish in which 65 per cent respondents don't take beef and 46 per cent respondents do not consume mutton. Beef consumption shows maximum variation in the graph because the survey was more of Hindu respondents. Rest mutton, chicken and fish have somewhere similar trends with minimum variation. Maximum respondent consumes 2 kg beef, chicken and fish whereas 10 kg & above is consumed minimum by all the categories (Figure 2).

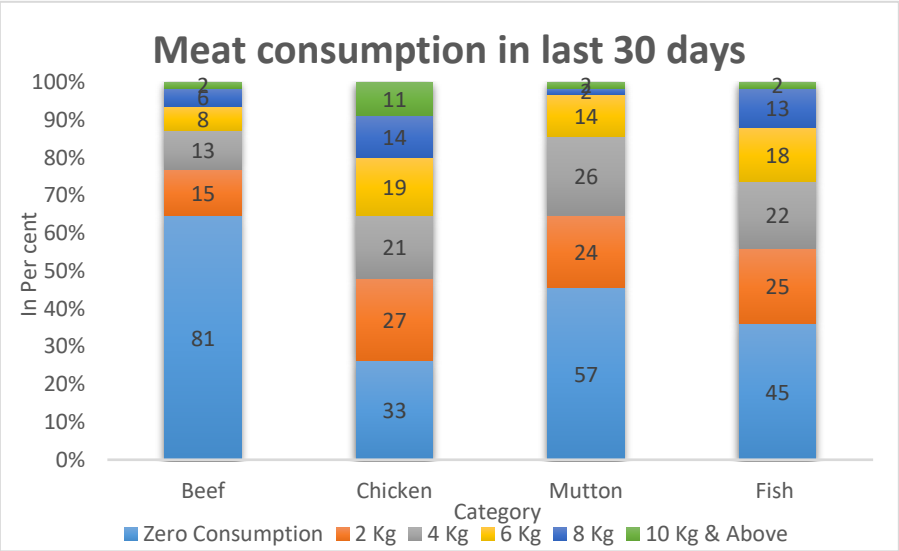

Figure: 2 Average consumption of Meat in last 30 days

Source: Primary survey (February, 2021)

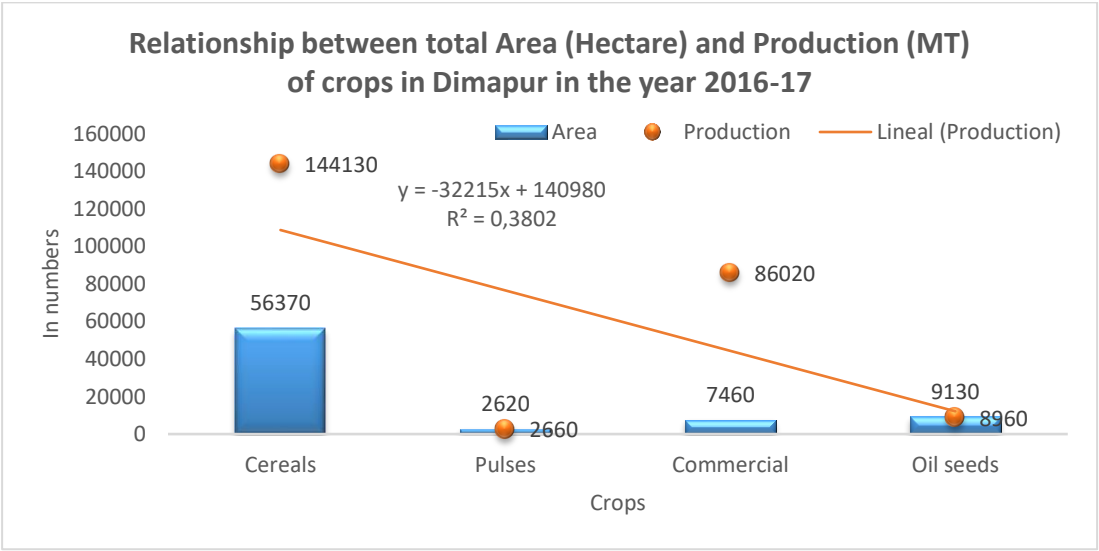

Figure: 3 Relationship between total area and production in Dimapur (2016-17)

Source: Prepared by Researcher (2021)

The relationship between the total area and production of crops in Dimapur in the year 2016-17 and 2017-18. In figure 5, the y = -32215x + 140980 where R Square (R^2) value is 0.3802 and its relationship between the area and production is low which can easily be compared with the figure 6 where the R square value is more. The range of differences in cereals and commercial crops are more which tends to saw a low R square value (Figure 3 and 4).

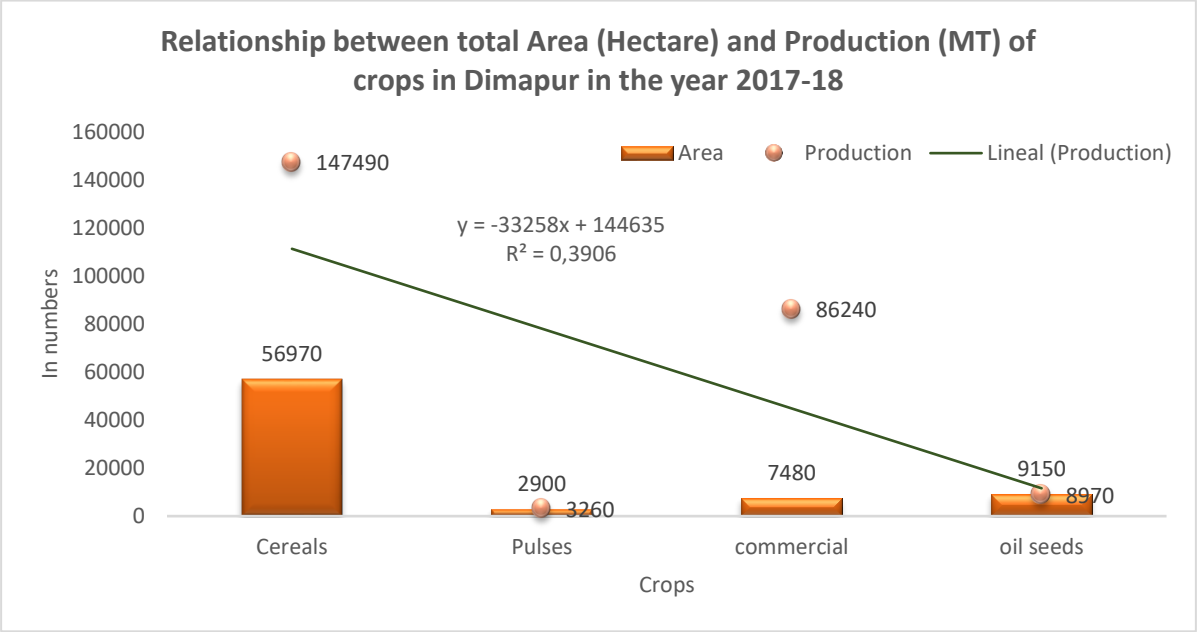

Figure: 4 Relationship between total area and production in Dimapur (2017-18)

Source: Prepared by Researcher (2021)

4(b) Accessibility

The access as having "physical, financial and social access" as characterizes by World Food Summit. Access is not yet generally acknowledged as a basic piece of food security despite presentation of Amartya Sen's idea in the mid-1980s. Numerous individuals just think about access inside an economic or monetary context, especially since the Niger food emergency in 2005 and in 2008 the food price begins instability. Food access as "A family's capacity to get sufficient amount of food consistently through a combination of purchases, borrowings, barter, food assistance or gifts" as defined by the World Food Program (WFP, 2009).

The annual household income of the 18 per cent respondents earning is below Rs 100 thousand, 18 respondents between Rs 100-300 thousand, 22 respondents between Rs 300-500 thousand, 14 per cent respondents between Rs 500-800 thousand, 13 per cent respondents between Rs 800-1000 thousand and 16 per cent respondents were above Rs 1 million incomes annually (Figure 5). The average of overall household income is between Rs 400-600 thousand but still if we notice the scale of first 3 categories, they are at the very low grade. Since from the past decades, due to inflation and competition between people the tension built up on the community which perhaps leading to exhaustion in the economy.

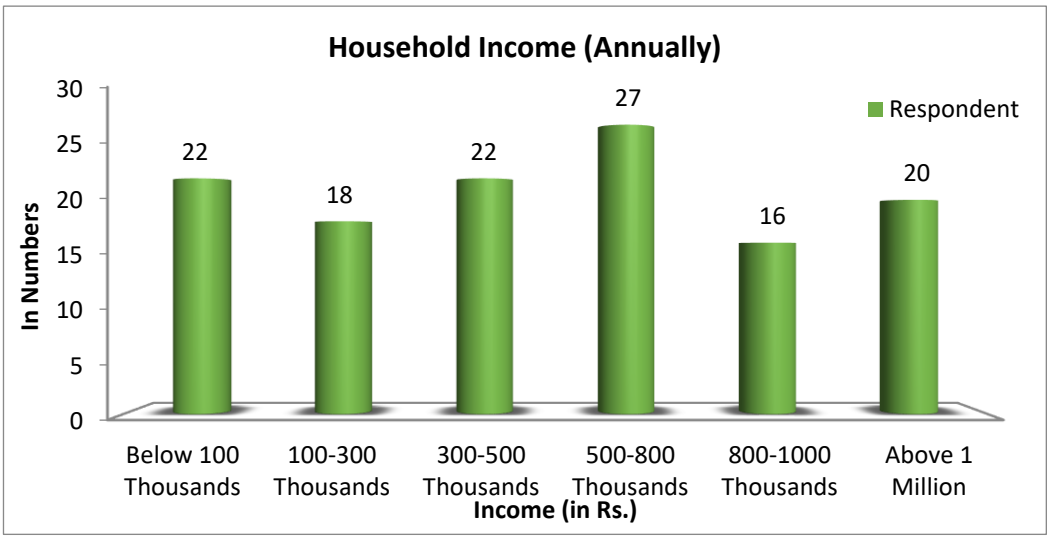

Figure: 5 Annual Household Income

Source: Primary survey (February, 2021)

Income and expenditure are the integral part of economy and they are inter related to each other where both of them have a positive relation like when income increases expenditure also increases and vice versa. Food expenses by the 28 per cent respondents is maximum in Rs 3000 category where 7 per cent respondents spend Rs 6000 on food is minimum likewise same for another category. Miscellaneous expenses include other than the above expense where 24 per cent respondents spend Rs 3000 and 5 per cent respondents spends above Rs 7000 which is maximum and minimum respectively (Figure 6).

Figure: 6 Household expenditure per month

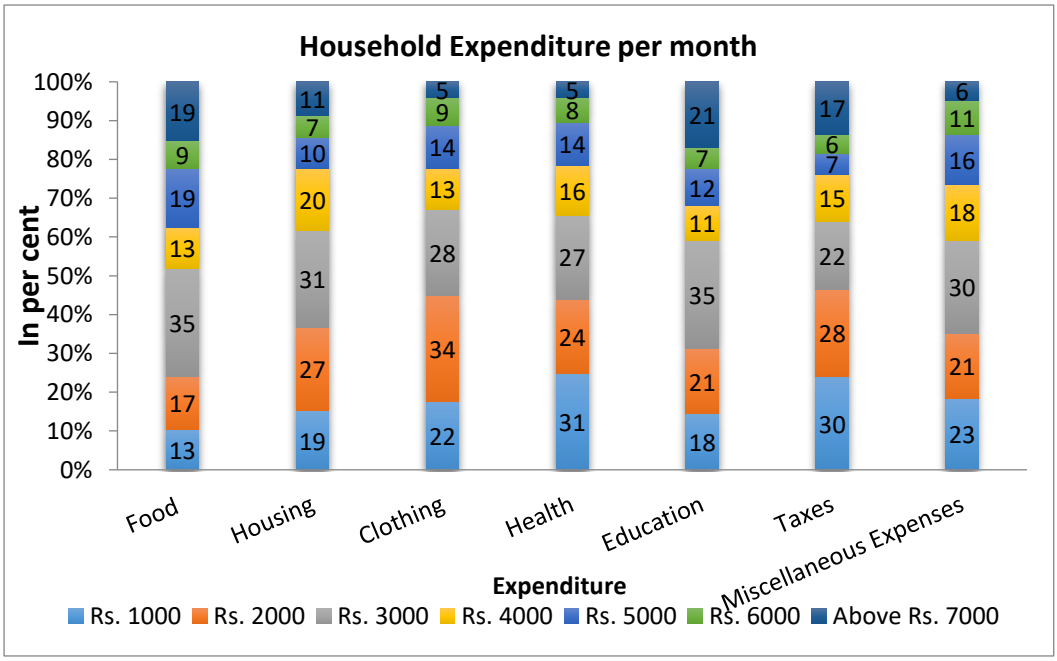

Figure: 6 Household expenditure per month. Source: Primary survey (February, 2021)

4(c) Use and Utilization

The World Food Summit define of use and utilization (3rd element of food security) is *"protected and nutritious food which meets their dietary requirements".* The availability and accessibility to food whole alone are not sufficient, must be access individually of "protected and nutritious food" (Mbow et al., 2014). Use and utilization additionally comprises of factors, like, sufficient sanitary facilities and safe drinking water to keep away from the illness spread just as attentive to capacity techniques and food preparation. Utilization hence covers a scope of viewpoint that depend on the consumers' comprehension of what varieties of food to make and choose that how to store and plan them. It's frequently a mistake to expect that the individual from social traditional orders realize how to utilize resources of food and it's additionally a reality that propensities of dietary immediately change, in any event, for social orders conventional.

Use portrays the socio-economic nutrition security and family food parts, controlled by habits and information. Accepting that nutritious food is available and accessible, the family needs to choose how to plan and what food to buy it just as how to prepare and assign it within the household. (Swaminathan, 2001)

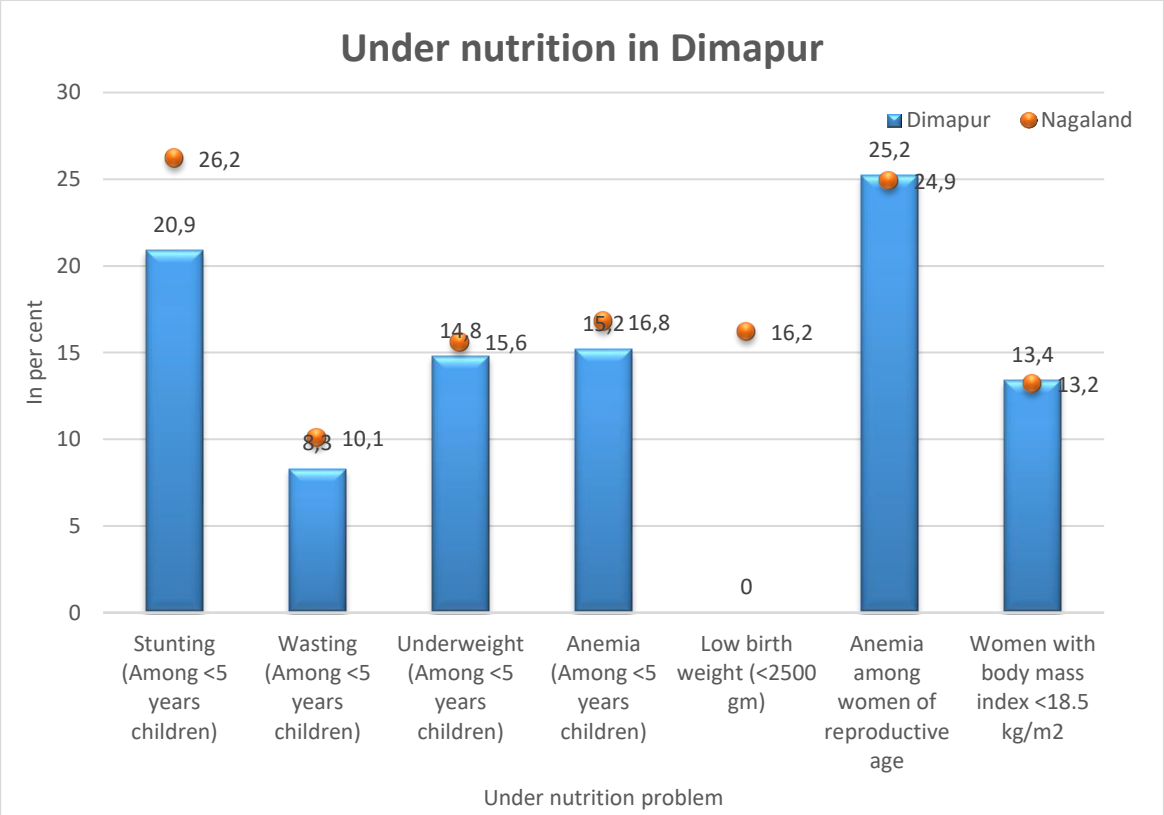

Figure: 7 Status of under nutrition in Dimapur

Source: Poshan, Led by IFPRI (2019)

Nutrition is one of the important factors for the development of physical and mental growth. Now a days there are many diseases occurring because of the deficiencies of minerals and vitamins in our body. Every aspect in the above category of Dimapur is below the par score of Nagaland except anemia among women of reproductive age which is 0.3 per cent more. Stunting is around 20.9 per cent among the children less than 5

years in Dimapur and 26.2 per cent in Nagaland. Wasting, underweight and anemia less than 5 years category which are very close to the par score of Nagaland. Low birth weight <2500 gram in Nagaland was 16.2 per cent but there is no data available for the Dimapur. Women with body mass index <18.5 kg/m^2 in Nagaland was 13.2 per cent and in Dimapur it was 13.4 per cent (Figure 7).

4(d) Stability

The Summit of World Food explains that stability should be available and accessible "consistently at all times" as far as availability, accessibility and use for food security. The literature and journals remember ongoing food instability in which food needs cannot be met through an extend timeframe and transient food insecurity, in which the time period is more volatile (Mechlem, 2004). *"Food stability refers to the capacity to get food over the long run. Food insecurity can be temporary, occasional, seasonal or persistent."* The level of food production, disaster drought and events bring about diminished food availability and crop failure and also accessibility. Common conflicts can likewise diminish food accessibility (Godfray et al., 2010).

In business sectors bringing about food-value spikes can cause passing food instability. Different variables that can briefly cause insecurity of food are work loss or efficiency, which could be brought about by disease. Occasional instability of food can result the ordinary example of developing in food production seasons. It is imperative to focus on the existence cycle approach supported in the NFSA (National food security act, 2013), especially the initial thousand days in a children's life when the psychological capacities of the child are formed. Otherwise, there might be adverse consequences on security of food in to the longer from medium term.

Shelter is among one of the basic needs of the living creature. In Dimapur, the tenancy status is somewhere quite expected because of the rules and regulations by the government of Nagaland that no outsiders will be allowed to purchase land in the territory of Nagaland until and unless they have the domicile. Out of 125 respondents, 57 respondents are owner, 51 respondents are tenant and 17 of them lives in different places like on road or jhuggi/jhopri (Primary survey, February 2021).

Household members experience many problems in their life sometimes it's for short time and sometime it never ending. In the past 2 years, Maximum 26 per cent respondents have negatively impacted their households from loss of employment/reduced salary, 15 per cent respondents got affected by health expenditures and 16 per cent respondents experienced loss in business and this is just because of the pandemic situation that occurred last year (Figure 8). Over and above, all these difficulties come in everyone's life and the best security is saving and investment. Uncertainties are nowadays very common and that can occur anytime and anywhere (Sharma, 2007).

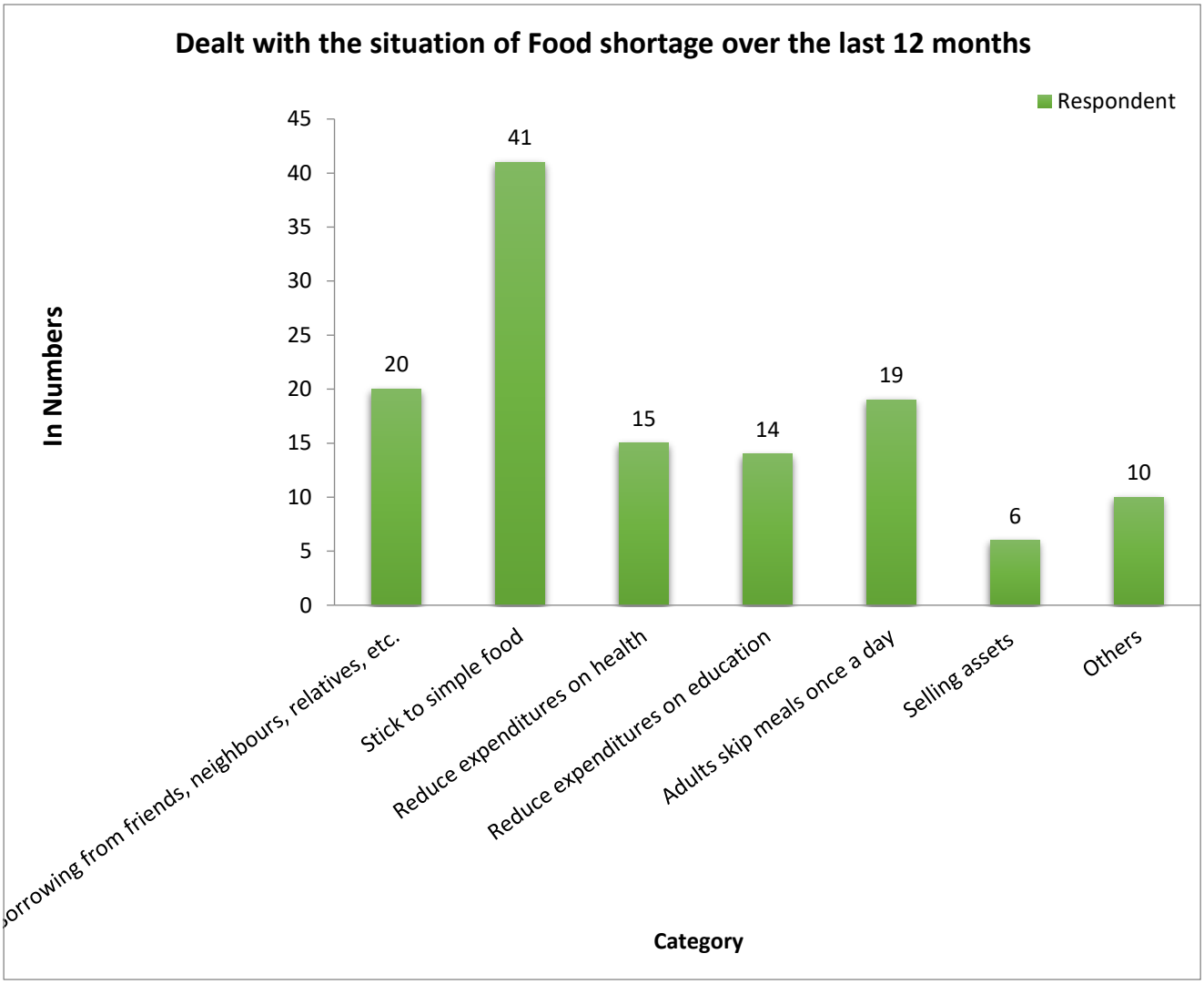

Figure: 8 Situation of Food shortage over the last 12 months

Source: Primary survey (February, 2021)

RESULTS AND DISCUSSIONS

The decadal change of land use pattern of Dimapur from 1998-2018 where in 1998, agricultural land was 17.35 per cent, water body was 3.01 per cent, build up area was 12.52 per cent and the most area covered by forest was around 67.12 per cent. In 2008, the agricultural land decreased to 14.83 per cent, water body increased to 3.14 per cent, build up area increased to 17.12 per cent and forest land decreased to 64.91 per cent. In the recent 2018, the agricultural land again decreases to 12.64 per cent, water body is consistently increasing to 4.49 per cent, Build up area increased to 19.47 per cent and forest land decreased to 63.40 per cent (Figure 9).

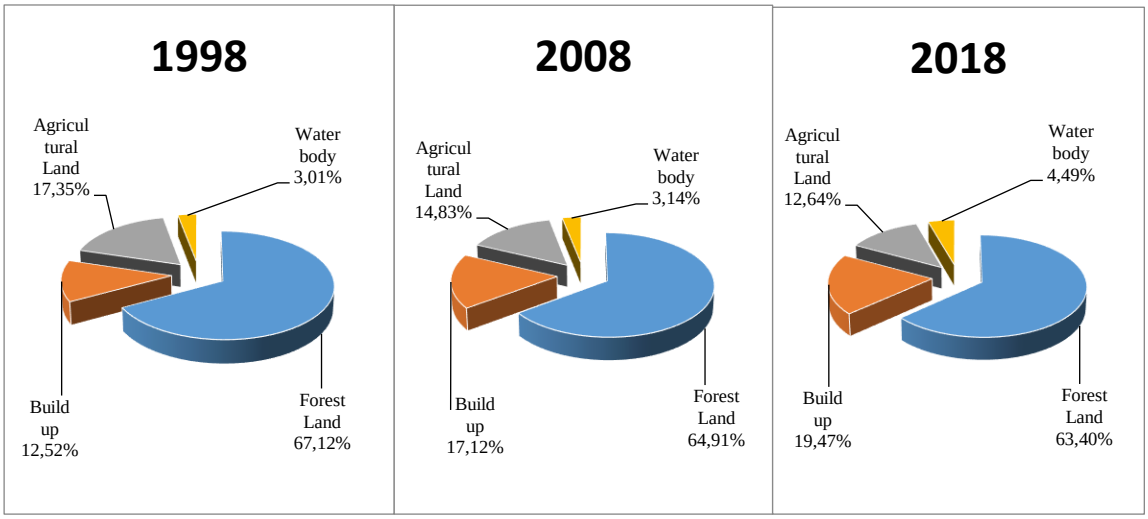

Figure: 9 Land use Pattern of Dimapur (1998-2018)

Source: Census of India & Agriculture Census (1998, 2008 & 2018)

Under the food baskets, family households' food expenses on different food items, and so forth are examined to discover the situation with availability of food on weekly basis. Higher extent of produce of own was taken with likely more significance. The basket of food arranged from the 125 respondent response of individual family members from Dimapur district. The table also gives the diverse groups of food that locally were accessible and available in the Dimapur. Average food intake addresses which demonstrated 8 food categories intake by families. With maximum 4 individuals in small family size, with 5 to 7 individuals in medium families and 8 family and above individuals in large size families were categorized in family capacity (Table 3).

The 8 nutrition bucket distinguished from the district surveys were Cereals (Maize, millets…), Cereals (Rice), Milk, Vegetables, Egg, Fruits, Fish and Meat. Most elevated utilization was of staple food cereals and the milk was least. It was also seen that as household basket expanded, the utilization of every item additionally expanded with consistent rate.

The rates of the food groups are calculated through the survey. This rate may differ from place to place and season to season. The average price of cereals (Rice) was taken as 30 per kg, Cereals (Maize, Millets…) was taken as 60 per kg, 50 per kg for vegetables, 80 per kg for fruits, Milk was taken as 45 per liter, Egg was taken as 4 per piece, 120 per kg for fish and 180 per kg for Meat (Table 3). The survey was done on monthly basis but looking at the procedure and calculation to find out food security and its component, further the data was converted into weekly consumptions by the household individuals. All the data calculation were done manually in excel.

Table: 3 Average household food consumption

Rates in Rs.	-	30 Per Kg	45 Per Lt	60 Per Kg	80 Per Kg	50 Per Kg	4 Per Pc	120 Per Kg	180 Per Kg
Family size (members)	Gross Monthly Income	Cereals (Rice) (kg/week)	Milk (g/week)	Cereals (Maize, millets) (kg /week)	Fruits (kg/week)	Vegetables (kg/week)	Egg (piece/week)	Fish (kg/week)	Meat (kg/week)
4	18655	1.02	0.93	1.46	0.83	2.04	4.27	0.55	1.27
6	25250	1.21	1.38	1.71	1.31	3.95	8.74	0.85	2.30
8	70457	1.19	1.56	1.57	1.32	4.09	6.61	0.64	1.57
Average	38120	1.13	1.27	1.54	1.14	3.62	6.63	0.69	1.76

Source: Primary Source (February, 2021)

Table: 4 Calculation of Food security components

Family size (members)	xFCS	zFCS	xHDDS	zHDDS	xHFIAS	zHFIAS
Small (≤4)	160.033	0.325	9.148	-0.776	0.147	0.313
Medium (5-7)	175.710	0.797	10.638	1.129	0.179	0.806
Large (≥8)	112.005	-1.122	9.479	-0.353	0.055	-1.119
Mean	149.249		9.755		0.127	
SD	33.193		0.783		0.065	

Source: Prepared by Researcher (February, 2021)

The computed value highlighted the food security components of the primary survey and all the 125 family size households respondents were compiled and further mean and standard deviation were calculated to know the food security index scores (Table 4).

Table: 5 Food security Index based on Household size

Family size	FCS*	HDDS*	HFIAS*	Food security Index (FSI)*
Small (≤4)	0.325	-0.776	0.313	-1.089
Medium (5-7)	0.797	1.129	0.806	-0.009
Large (≥8)	-1.122	-0.353	-1.119	-0.003

Source: Prepared by Researcher (February, 2021)
* Z-Scores values

The values of food security index is computed by applying 3 components. The value of Food consumption score, Household Dietary Diversity Score and Household Food Insecurity Access Scale are z-scores value and tells us to know about the percentage of z-scores (Table 5).

FCS tells us about the regular dietary variety ad similar nutritional categories available like in Medium (5-7) family size it shows that 78.52 per cent have same variety of food intake whereas in Large (≥8) family size 13.13 per cent respondents were having variety of dietary diversity. HDDS of Medium (5-7) family size shows the maximum which highlights about the financial access which need assets of the family. Even in the HFIAS shows the quantity security of 8 low food status in the last one month where Medium (5-7) family size shows that 79.10 per cent have a very low food status.

Table: 6 Food security Index (in per cent)

Source: Prepared by Researcher (2021)

*5% level of significance

Family size	FCS	HDDS	HFIAS	Food security Index (FSI)
Small (≤4)	62.55	22.06	62.17	14.01
Medium (5-7)	78.52	87.08	79.10	49.60
Large (≥8)	13.13	36.31	13.35	50.00

The Food Security Index is computed at 5 per cent level of significance which is in per cent. Overall the findings of the Food security index of Dimapur of Small (≤4) family size households shows only 14.01 per cent are secured and rest around 86 per cent of households are unsecured. In the Medium (5-7) family size households tells us that only 49.60 per cent are secured and rest around 50.40 per cent households are unsecured. In the category

of Large (≥8) family size households still only 50 per cent of the households are secured and rest half of the large family size are unsecured in Dimapur (Table 6).

CONCLUSION

The indicators of food security examination featured the requirement for elective procedure known to nearby residents of Dimapur. It was seen and observed from the study that basic occupation and household size were measurably important to determine security level of family food. At town level, it was the network and distance with local market nearby that have the effect between the areas. Food security and insecurity has also been constant throughout history and it shows the same presence at present even after so many paradigms shift and development over the years. The government has stepped up to fight against food security but they can't do with ease. There are still similar problem and situation with the hunger which has become invisible.

The comparative analysis of 2016-17 and 2017-18 of the production and area of different crops in Dimapur where area under cereals, commercial crop and oilseeds have decreased over a year. Whereas the area also increased for pulses from 6.78 per cent to 7.30 per cent. Overall, the percentage area of Dimapur has decreased from 17.33 per cent to 17.25 per cent. The production of cereals, commercial crop and oilseeds have decreased while the pulses production have increased from 5.98 per cent to 7.08 per cent. In total there is a decrease in the production of crops in Dimapur from 19.60 per cent to 19.53 per cent.

In the past 2 decades, Land use Land cover has changed both in Rural and Urban built-up areas where the rural built-up area is decreased and moved towards the urban built-up area. Agricultural land is also decreased from 17.35 per cent in 1998 to 12.64 per cent in 2018 of the total area of Dimapur whereas built up area is increased from 12.52 per cent in 1998 to 19.47 per cent in 2018. In the year 2018-19, total cropped area in Dimapur was 16.23 per cent of total area of Nagaland in which the cropping intensity of Dimapur was 148 per cent which is above the average of Nagaland 140 per cent of cropping intensity. The production of Cereals, Pulses, Vegetables and fruits is continuously increasing at an increasing rate but still unable to fulfill the needs from production.

The vulnerability of the people residing in Dimapur where they are suffering a lot ranging from their first meal to the nutritious meal of the day. To fight against all the odds Dimapur cooperation is necessary to improve food security. By improving agriculture, economy, health, nutrition, education and foremost environment which gives us the base for survival. ICDS (Integrated Child Development Scheme), cash benefits and pension plans for mother and so forth are taken on by the public authority for the incorporation of the weak section of the general public. Mid-day meals program was presented for children between ages 2-14 going to schools. In the coming years, they can also decrease the ability of the state to develop. Secure access to food can provide wide variety of positive impacts in the sectors including economic growth and job creation.

REFERENCES

Chale, S. (2018). Economic Analysis of Milk Production in Kohima District of Nagaland. International Journal of Agriculture Sciences, ISSN, 0975-3710. http://surl.li/bcoqb

Dayal, E. (1978). A measure of cropping intensity. The Professional Geographer, 30(3), 289-296. https://doi.org/10.1111/j.0033-0124.1978.00289.x

Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., and Toulmin, C. (2010). Food security: the challenge of feeding 9 billion people. Science, 327(5967), 812-818. https://www.esalq.usp.br/pg/docs/art02_212.pdf

Giribabu, M. (2021). Nagaland State Rural Livelihood Mission (NSRLM) and Sustainable Development: Some Field Based Evidences. Economic Affairs, 66(1), 33-40. DOI: 10.46852/0424-2513.1.2021.5

Jaiswal, S., Anand, S., & Saini, A. (2019). Analyzing the soil health of Yamuna flood plains, Delhi. Shodh evam Shaikshnik Samiti (regd.) Gulaothi,(Bulandshahr), Uttar Pradesh, India, 1. https://thehorizonjournal.in/wp-content/uploads/2019/12/jul-2019-2.pdf#page=9

Jamir, B., and Deb, C. R. (2014). Some fermented foods and beverages of Nagaland, India. International Journal of Food and Fermentation Technology, 4(2), 87-92. http://ndpublisher.in/admin/issues/IJFFTV4N2b.pdf

Kumar, A., Bantilan, M. C. S., Kumar, P., Kumar, S., and Jee, S. (2012). Food security in India: Trends, patterns and determinants. Indian Journal of Agricultural Economics, 67(3), 445-463. https://ageconsearch.umn.edu/record/204827/files/16-Anjani%20Kumar.pdf

Kumar, A., Ahmad, M. M., and Sharma, P. (2017). Influence of climatic and non-climatic factors on sustainable food security in India: a statistical investigation. International Journal of Sustainable Agricultural Management and Informatics, 3(1), 1-30. http://dx.doi.org/10.1504/IJSAMI.2017.082917

Krug, M., Schlecht, E., and Buerkert, A. (2013). Agricultural sustainability and food security of Jhum systems in Nagaland, NE India. Outlook on Agriculture, 42(2), 133-139. https://doi.org/10.5367/oa.2013.0121

Maxwell, S. (1996). Food security: a post-modern perspective. Food policy, 21(2), 155-170. https://doi.org/10.1016/0306-9192(95)00074-7

Mbow, C., Van Noordwijk, M., Luedeling, E., Neufeldt, H., Minang, P. A., & Kowero, G. (2014). Agroforestry solutions to address food security and climate change challenges in Africa. Current Opinion in Environmental Sustainability, 6, 61-67. https://doi.org/10.1016/j.cosust.2013.10.014

Mechlem, K. (2004). Food Security and the Right to Food in the Discourse of the United Nations. European Law Journal, 10(5), 631-648. DOI:10.1111/j.1468-0386.2004.00235.x

Patel, R. (2013). The long green revolution. The Journal of Peasant Studies, 40(1), 1-63. https://doi.org/10.1080/03066150.2012.719224

Ramsundar, B., and Jaydeb, S. (2011). Food crisis and sustainable food security in India. Eur. J. Bus. Manage, 3(10), 77-85. https://core.ac.uk/download/pdf/234624121.pdf

Rosegrant, M. W., and Cline, S. A. (2003). Global food security: challenges and policies. Science, 302(5652), 1917-1919. https://doi.org/10.1126/science.1092958

Sahu, A. K., Chüzho, Z., and Das, S. (2017). Measuring household food security index for high hill tribal community of Nagaland, India. Food Security. 5, 155-161. DOI: 10.12691/jfs-5-5-1

Sharma, U. C. (2007). Sustainable Agriculture for Enduring Food Security in the North-Eastern States of India. Biodiversity and Its Significance, 58. http://surl.li/bcooh

Singh, A., and Singh, R. K. (2007). Cultural significance and diversities of ethnic foods of Northeast India. http://nopr.niscair.res.in/handle/123456789/853

Swaminathan, M. S. (2001). Food security and sustainable development. Current Science, 81(8), 948-954. shorturl.at/uJK78

Received: 14th February 2022; Accepted: 20th April 2023; First distribution: 22th April 2023.