IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Climate Change and its Impact on Central Himalayan Rural Community Food Security & Status, (Special Reference to Ballia Region)

Dr. Poonam Shah, Gangola Assistant Professor Geography
Dr. Mohan Singh Sammal (Geography) (RF)
S.B.S. Government PG Collage Rudrapur, Kumaun University, Nainital (263153)

Abstract: Food security and climate change have a close relationship. While food grains production is being affected globally due to climate change, the lack of food grains is affecting human health and livelihood in the Central Himalayan Study States, because the highest dependence of human health has always been on food. Unlike climate change, climate elements have affected food security by affecting all the physical and human resources of the Himalayan, and all sections of society (from low to high) are in a state of food insecure. Food security is going to be a very sensitive phenomenon in the Central Himalayan region. Most of the hill and subject complex structures do not fit in equal conditions for food products, where about 60 to 70% of the food production depends on the rainfall and local weather. These changing climatic conditions have made food insecurity and women's lifestyles painful for the Central Himalayan community. While the lack of governmental access is not able to succeed fully in the mountainous inaccessible conditions, the climate change does not show any possibility other than the opposite situation in the production of traditional food grains and starving the communities living in the Middle Himalayan study areas she gives. Thus the natural and cultural conditions of the Himalayan regions have been affecting food security for the last 3-4 decades. The solution of which is to maintain the food security level in the traditional form of modernism by adopting concrete strategies (environmental sustainability, sage method, agriculture sector, production capacity, storage or tea access in inaccessible places) in Himalayan study regions.

I. Introduction- Food security refers to the availability of food grains of acceptable quality to all persons and the availability of food without hindrance, which is accorded the status of the current envisaged food security. The determination of which is adopted for the public of the country in the event of danger according to its own means and the current conditions set by the

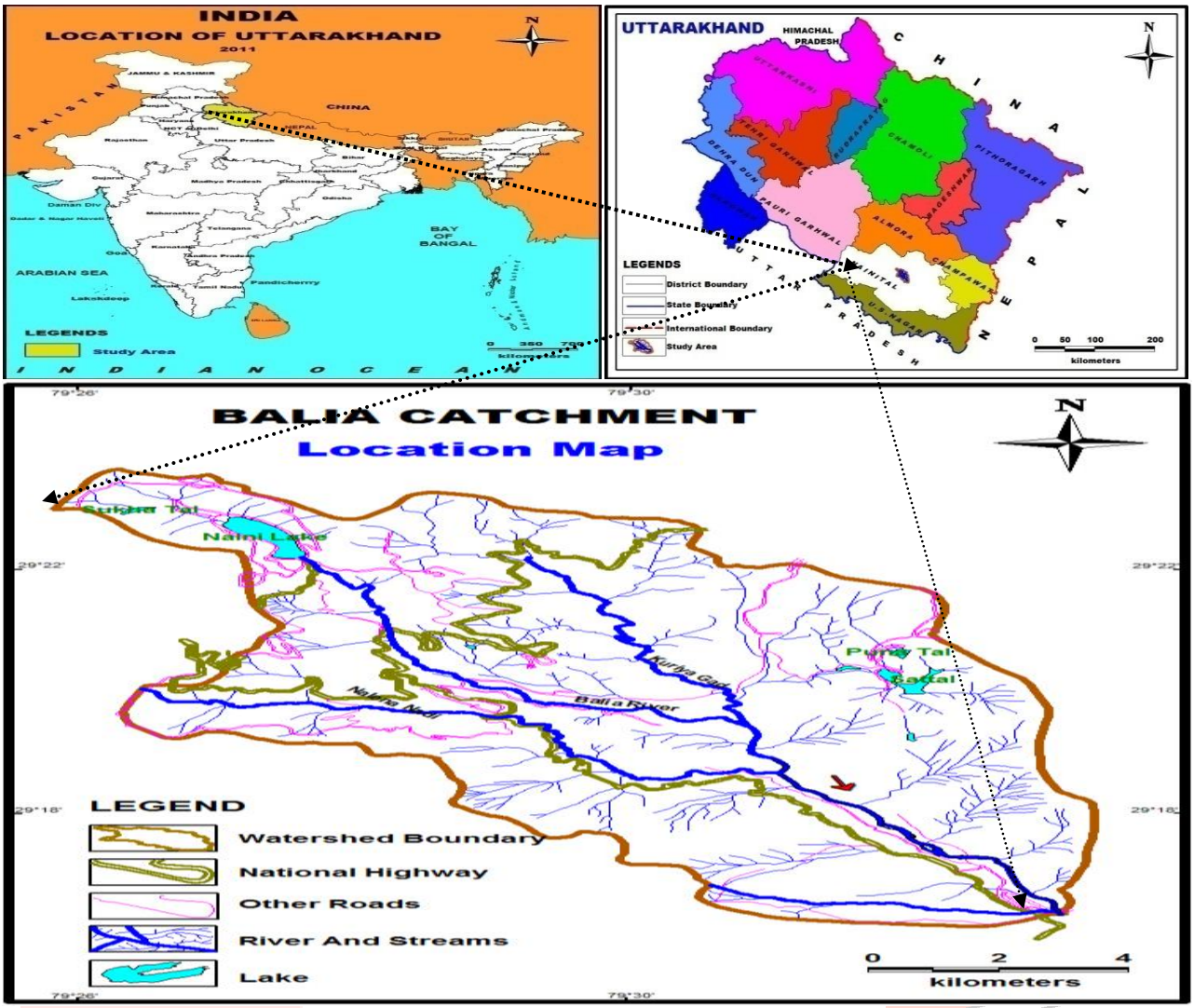
government. In which both able and incompetent persons are provided with the right food at all times. The importance of food security attains stability when "safe and nutritious food sufficient to lead an active and healthy life at the individual family, regional, national and global levels is always accessible to all people physically and financially and which is human It is useful physically and financially.

The need for food productivity and safety in changing climatic conditions is further exacerbated in the Middle Himalayan community, when food production, productivity potential, nutrients are all affected by changes in climate elements (rainfall, temperature and Extreme weather conditions). This gives rise to adverse conditions for food insecurity at the Central Himalayan level and poses serious challenges to food security. Because most of the Himalayan agricultural food security is determined by climatic elements, climate change effects and population growth in the last 3-4 years have led to a small reduction in the production capacity of food grains and food security even after food access due to contraction in agricultural area. In the crisis, the self-sufficient food system of the Central Himalayan regions is currently affected by an average of 60-70 percent due to the sum of natural and human elements.

II. Research objectives- Assessing the impact of climate change on food security in Central Himalayan regions, assessing the level of food security and knowing the changes in traditional food system.

III. Research Methodology- Regional Home Survey for Assessing the Impact of Climate Change in Agricultural Production and Food Security, Appraisal Evaluation of Local People, Group Knowledge, Use of Food Safety Related Literature, Secondary Data, Traditional Knowledge and Suggestions for Factors Affecting Action Plan and Widely used for research work.

IV. Study Area- Central Himalayan regions (Especially Nainital District Micro-Catchment) have been included as research studies. Because this study has been equipped with all climatic characteristics on the basis of the state of the physical conditions and assimilates the human activities of the entire Central Himalayan regions, it exposes the truth to public opinion for susceptible parts in terms of food security.



Source: Indian Topographical Sheet No 53/o/7, 53/o/11

V. Subject Themes- Physical and Humanistic nature of the Central Himalayas, immediate natural and humanitarian disasters, (urbanization, migration) Food security, low food production, distribution and accessibility is increasing the sensitivity of food security at the present time. Is because local weather and climate have always contributed the most to traditional food security and no other option other than agriculture and animal husbandry is found in the developed state. Due to the change effect of climate or weather cycle, the production of all traditional food has been reduced by 45 to 50% in the Middle Himalayan region. Until about two decades ago, the self-sufficient food system of the Rural Central Himalayan community is currently dependent on the market or governmental means of safety even after the means. The poor rural community is steadily moving towards food insecurity, nearly 50% of the population has started to directly fulfil the work done by agricultural activities for food and livelihood and wages and other tasks has been effected and the nutritional food security has been affected on a large scale, based on food security in the Central Himalayan Study States.

The analysis of food security has been analyzed through the following headings based on the major standards of food security.

Food Availability- The availability of cereal foods as well as pulses, vegetables, milk products, non-vegetarian, sweet food and fat-rich foods determines the nature of food availability, but due to climate change effects and population growth. Due to decrease in production of food grains in the Central Himalayan regions, the traditional and modern food crisis in the Central Himalayan community is the biggest threat and failure of the food security mechanism in the future. The food availability of the Central Himalayan study areas is mainly grain-based, which, despite being the main source of carbohydrate energy, still lacks iron and vitamin content. Apart from food grains, other things are not available in the required quantity, in view of balanced food; Himalayan study states find two-thirds of the dispersed grains in food. In which the first class animal protein is very low, as well as lack of milk and vegetables in the food does not provide sufficient amount of vitamins and minerals. Which are decreasing with the production style, in the last three decades before the year 2004-05, in the rural (73 to 55%) areas the contribution of food to the total serve has decreased Odd.

The heterogeneous geographical conditions of the Central Himalayas are worsening food security day by day due to increasing temperature and lack of water availability, as well as crop production in sun crop cycle is decreasing more than the main crop kharif crops. Based on the availability of which the annual calendar of food security of these states is determined, as well as changes in soil and seasonal elements, urbanization, food grain productivity in current years (wheat, paddy and vegetables, cinnamon, guava, pear, walnuts in horticulture). Is not able to generate sufficient quantity of Due to which the average supply and food security system is not being ensured for a period of six months in a year, only the system of abdominal supply is dependent on the public distribution system and local markets. About 67% of the community is forced to live on low level food availability and 33% of the community has complete resources to provide nutritious food.

There has been low level nutritional food availability for poor, agricultural and labourer families. The reason for this is the lack of all this food produced locally due to the reduction in productivity capacity of traditional business, animal husbandry, Agriculture, Horticulture due to climate change. In the absence of which the families of the poor class (poor labourers, farming families), are unable to complete the market, in the absence of which most of the Himalayan majority is living malnourished life. While a human being in the mountainous region needs more food for primary and secondary activities along with different types of food to lead a simple life in daily life.

The National Nutrition Monitoring Bureau standard prescribes various nutritious foods to a human being with 1130 grams of food per day. Whereas in the Central Himalayan region, there is no food supplement in full quantity except food grains. According to Dr. J. C. Kunyal standard, a person is said to be food safe only when 485.80 grams of food grains and 1599.79 kg of calories energy is available per person per day However, in the Middle Himalayan study

results, about 67% of the population did not meet the above standards, but the medium and poor rural population included the use of wheat, rice, vegetables and pulses in quality quantity in the availability table. 50% of the sample population in the Central Himalayan region averaged 365 days of the year depending on food availability means dependence With their own farming, they are able to produce 111 days of food, the remaining 134 from the food markets for wages and other occupations and 120 days from the government cheap grain shops which are being implemented by the public distribution system. While the Central Himalayan region has been agrarian, it has been self-reliant in food availability for hundreds of years. As a result, uncultivated areas are becoming more food insecure than irrigated areas, leading to more dependence on the market. According to the standard of Dr. J.C.Kunyal, the details of per capita food availability in different small Himalayan study regions taken in the study are given in the table and figure number 01.

Central Himalayan Study Area per person food availability (in grams)

Food	Per Capta food standard	(Micro-Watershed)					Average volume in grams
		Balia	Kuriya	Nalena	B. East	B. West	
Wheat	180.80	195	198	200	202	205	**200**
Rice	202.00	192	195	197	205	210	**199.8**
Barley	30.40	20	24	18	15	10	**17.4**
Maize	20.90	25	30	28	30	32	**29**
Pulse	20.70	42	50	36	80	60	**53.6**
Other	31.00	50	64	61	67	69	**62.2**
Total Availability	**485.8**	**524**	**561**	**540**	**599**	**586**	**562**

Table No. 01 Source: Central Himalaya Geographical Survey 2015-2020

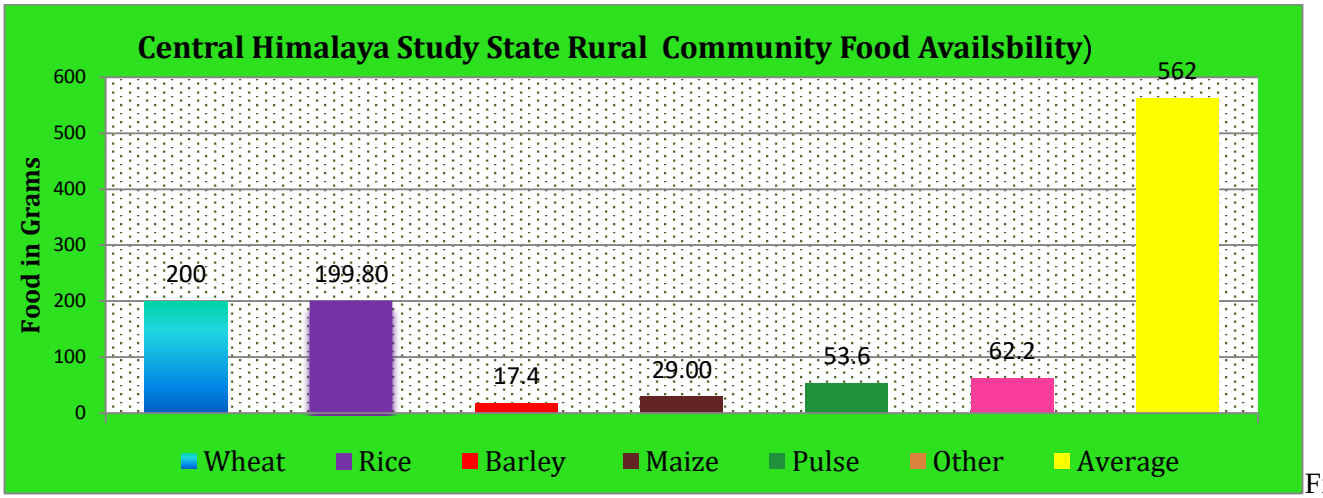


Fig. No. 01 Source: Central Himalaya Geographical Survey 2015-2020

From the above table and Diagram number 01 it is known that the prescribed quantity for a person is 485.80 grams per day, sixty different which in the mid-Himalayan study areas, on average 562 grams of mines per person are presently available.

Balanced food security cannot be envisaged in the Himalayan regions based on the usefulness of such practices. Whereas, 30-35 years ago, the certainty of all the food items in the above table was more than required with milk products, so that the shortcomings of all the food demand were filled. This is currently being completed by grain due to less. The change in the mutual system has made the More community vulnerable (fruit, milk and local vegetable products) of the balanced diet chain. The second pillar of food security analysis of food access parity is explained in the following title.

Food Access- Food Access Food Access Food access generally refers to the availability of food for each person. Which is levied by the economic ability of each person to access food at any time, in the context of the middle Himalayan study areas, communities, food access level, geological condition of the state, social and economic variation, low level food production capacity, complex resource accessibility Such as physical and cultural reasons cause food access in the mountain areas even after food is available. Most communities here have limited access to certain types of food grains. Which are occurring locally, so that food crisis always persists, which is becoming more complex in the current changing climatic conditions due to which the resources that determine locally access are affected by climate and weather elements. Is not in a position to work with in India

Middle Himalayan Geographical Survey of various Minority Studies states that due to the impact of elements of climate in the traditional occupations of the basin, the reduction in local products, commercial use of agricultural land and increasing urbanization make the Himalayan people far from food and live Keeps it limited to simple food items. Whereas 30-35 years ago, about 70% of the community was dependent on only 10% of the food grains on the market, including 40 types of agriculture and 10 types of wild food and all milk products on their own land, with 70% of the community being able to access food. Due to non-availability of adequate economic resources, the scarcity/access to the food grains of the market was met through local exchange. But due to changing circumstances from the last 30-35 years, the accessibility of food grains in the current years is being determined on the basis of economic efficiency in place of agricultural works. The details of the production or demand for major food grains as per the home survey of small Himalayan water basins are explained from Table 02.

Central Himalaya Study State Main Crop Demand, Production & Deficit (Per Year)

Micro-Basin	Main Crop	Demand	Production	Deficit	Deficit %
Balia	Wheat	110.5	5.00	105.5	**39.65**
	Rice	112.29	2.00	110.29	**41.45**
	Barley	16.78	0.20	16.58	**6.23**
	Maize	11.61	0.10	11.51	**4.32**
	Pulse	10.00	0.50	9.95	**3.73**
	Other	17.23	5.00	12.23	**4.59**
Average		**46.40**	**2.13**	**44.27**	**-**
Kuriya	Wheat	35.99	3.00	32.99	**35.90**
	Rice	40.21	0.50	39.71	**43.73**
	Barley	6.05	0.15	5.90	**6.49**
	Maize	4.16	0.05	4.11	**4.52**
	Pulse	4.12	0.20	3.92	**4.31**
	Other	6.17	2.00	4.17	**4.59**
Average		**16.11**	**0.98**	**15.13**	**-**
Nalena	Wheat	22.87	2.00	21.87	**37.87**
	Rice	25.55	1.00	24.55	**42.51**
	Barley	3.84	0.10	3.74	**6.47**
	Maize	2.64	0.02	2.62	**4.53**
	Pulse	2.61	0.30	2.31	**4.00**
	Other	3.90	1.25	2.65	**4.58**
Average		**10.23**	**0.77**	**9.46**	**-**
Balia East	Wheat	48.85	6.00	44.85	**36.42**
	Rice	54.58	5.00	49.58	**40.26**
	Barley	8.21	0.08	8.13	**6.80**
	Maize	10	0.20	9.80	**7.59**
	Pulse	5.59	1.20	4.39	**3.56**
	Other	8.37	2.00	6.37	**5.17**
Average		**22.6**	**2.41**	**20.19**	**-**
Balia West	Wheat	35.09	7.00	27.09	**35.56**
	Rice	39.20	6.00	33.20	**43.58**
	Barley	5.90	0.10	5.80	**7.61**
	Maize	3.11	0.15	2.96	**3.88**
	Pulse	4.01	0.90	3.11	**4.04**
	Other	6.01	2.00	4.01	**5.26**
Average		**15.55**	**2.69**	**12.86**	-
Total Average		**22.13**	**1.8**	**20.33**	-

Table No. 02 Source: Central Himalaya Geographical Survey 2015-2020

In the Central Himalayan regions surveyed, an average of 18 metric tons of food grains is produced annually from local agricultural operations, while an average of 22.13 metric tons of all types of food grains per year is demanded by the Central Himalayan Study State community. While an average of 20.33 metric tonnes of food grain is produced on an average compared to the demand, about 91.89 percent reduction of food grains produced from own agricultural farmers has been found in the entire study areas. The shortfall has been due to the dryness of the Central Himalayan studies areas and the low production of traditional agricultural products due to climate change effects. At present, crops of wheat and paddy have remained the main agricultural products, while food products such as maize, barley, pulses have been found in the entire Himalayan region. The Third pillar of food security analysis of food access parity is explained in the following title.

Food Utilization- Food use is the third dimension of food security, defined as the capacity that provides the human body. All physical needs are met only through adequate diet, in which dietary elements include wheat, rice, maize, barley, potato, safflower, chicken, eggs, milk meat, etc., which are defined as food. The process of making changes in nutrients results in the calculation of the elements that drive the body under food utility, but the survey results did not find the importance of food utility to any person in line with the standards set in the Middle Himalayan community. The importance of food utility in Central Himalayan rural community is explained by Table No. 03 and Figure No. 02.

Central Himalayan Studies State Average Food Utilization (In Percentage)

Nutrition Elements	(Micro - Watershed)					Average Percentage
	Balia	Kuriya	Nalena	Balia East	Balia West	
Food (Wheat, Rice)	97	97	98	99	99	**98.0**
Other Food	18	19	33	24	42	**27.2**
Fresh water	70	60	60	75	85	**70.0**
Pulse	15	18	27	50	23	**26.6**
Fruits	19	16	25	29	40	**25.8**
Vegetable	90	93	97	98	99	**94.4**
Milk Product	30	37	39	40	50	**39.2**
Healthy Health	80	78	74	70	69	**74.2**
Sanitation	98	97	97	99	96	**97.4**
Average	**57.44**	**57.22**	**61.11**	**64.89**	**67**	**61.53**

Table No. 03 Source: Central Himalaya Geographical Survey 2015-2020

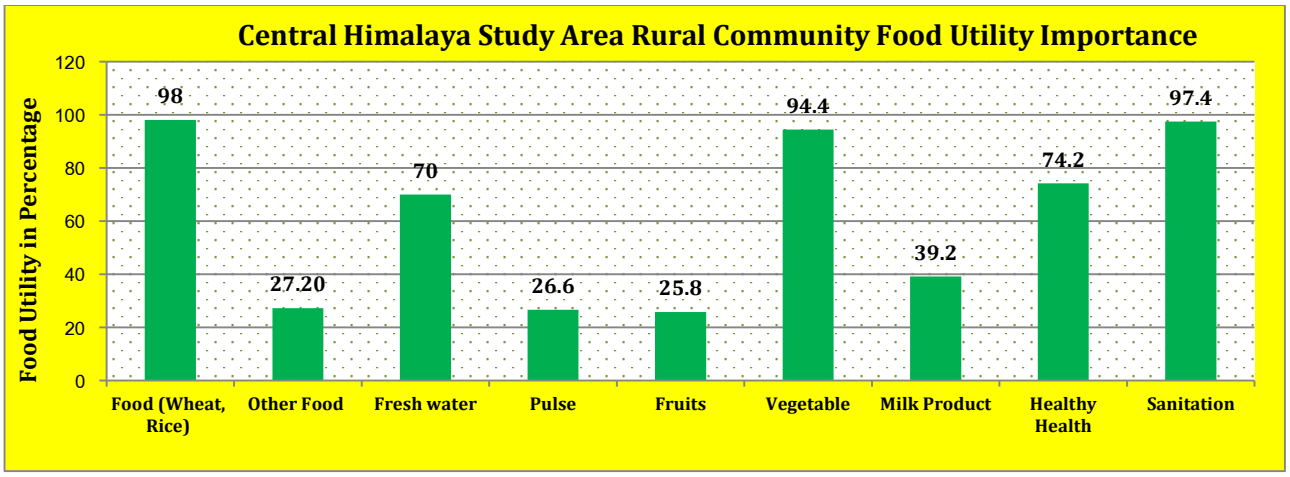


Fig. No. 02 Source: Central Himalaya Geographical Survey 2015-2020

From the above table 05 and article 03 it is known that the average utilization of all essential food grains in Central Himalayan regions has been 61.53%. In which the availability of any kind of food, except wheat, rice, vegetables and sanitation is not equal to 100%. The main reason for the disparity in food utility percentage is the main factors in the Himalayan study areas due to climate change, the reduction in the availability of food grains by their own means, the reduction in production of seasonal crops, economic inefficiency. Pulses and milk are less than 40% useful. While this food provides the best and highest contribution to man's nutritious food, food utility cannot be imagined in the context of an individual in the Himalayan regions.

Thus, the importance of food utility for the middle Himalayan community has reduced by 39.43% in the circumstances of the changing climate and the utility of the present food items to live a simple malnourished life. While the Mid-Himalayan Study States have their own self-reliant rural people using their traditional agricultural husbandry, horticulture, milk products, natural wild food and pure organic food, the current and new in the Himalayan region due to the changes made by the honourable people from the past three to four decades. The utility of food for the generation is beginning to end. For the purpose of crossing the life of the Himalayan local population

Human life of sessions cannot be possible at all. It is clear that due to climate change in Himalayan region, there will be an ongoing process in the rural population as the scarcity of all the food with nutritious food, as well as essential food for the living, which will result in lack of agricultural work as well as climate and weather Due to change in the elements, the human form will remain from the middle Himalayas to the great Himalayan range. The Fourth pillar of food security analysis of food access parity is explained in the following title.

Food Stability-

Food Stability Fourth pillar of food security in the context of food sustainability based on the findings of availability, access and utility of food for the local community in the mid-Himalayan study areas, in problems of climate change and traditional occupations. Changes have made it

challenging. Where the local community is able to store food grains for an average of 3 months in a year due to its own resources, the same food availability and assurance is becoming more dependent on the government and other mediums, which is only to fill the stomach in which it is balanced, Food is only a fraction. At the same time, with the average utilization of food grains being 61 percent for the local community, the sustainability of food grains is becoming unstable in mountainous regions with heterogeneous geographical conditions, which will fail in all kinds of food access arrangements in the event of environmental and humanitarian crisis.

From the findings of the research survey, it has been found that in the Central Himalayan Study Areas, about 84 percent of the community does not store food grains, which they fulfil by purchasing from the markets daily or monthly, whereas till 20-25 years ago here The rural community used to complete the supply of all types of food grains through local agricultural work and animal husbandry, and all the food being in livelihood as well as food grains for the whole year Storing food security by gathering in food stores. She is currently self-sufficient by means of climate change, changing climatic conditions and changes in seasonal events and traditional occupations. All communities (rich, middle and lower class) living in Himalayan regions on a large scale in terms of food sustainability. Food instability can create a crisis in the present and future.

VI. Conclusions- Climate change has indirectly affected the food availability agency of the middle Himalayan rural community. Due to which the major food providers providing stability to the Himalayan community, both the nutrition and availability levels are working a distance in food access. And Central Himalayan regions are on the verge of climate change due to their food pattern, production style, storage system, agricultural model, animal husbandry and milk business, fruit production, allied natural food products and nutritional level for the last three decades. The availability of balanced food supplements in the central Himalayan regions currently determines food access for 33 percent of the community. And with 67 percent of the community away from food access, it also reduces the importance of the utility of food for the community. The highest reduction in prescribed standards is found to be around 50-95% in milk products, fruits, maize and barley food grains, which is an indicator of extreme crisis for the future. The same means of decreasing agricultural production and changing climatic conditions are lowering the level of food sustainability for the community living in the Middle Himalayan study areas.

VII. Suggestion- Central Himalayas, being the new mountain region of the world representing the most population, has been a more useful mountain range in terms of human health. Despite the difficult conditions, it provides a style to the rural masses to produce food products through the preserved experience of many generations to live up to the local mass community, but in times of climate change the Himalayan rural mass community's food production, food Access and food utility are all decreasing, which is becoming more sensitive

due to being the habitat of the largest population. For whose survival, it is very important to provide protection to the food system and lifestyle of the Himalayan community and new innovations and observations are needed for conservation.

Reference

- Amutha, D. 2015: *Food And Indian Agriculture Article*
- Anderson, S.A. (1990): *Core indicators of nutrition alstate for difficult-to-sample populations.*(1990); 120: 1556-600. [pubmed]
- FAO (2003). *World Agriculture*: towards 2015/2030 Ed. Jelle Bruinsma. Earthscan Publications, London.
- FAO, AHP, (2002). *Anti-Hunger Programme: Reducing Hunger through Agriculture and Rural development and wider access to food*, FAO, Rome.
- Hamilton W.L. (1995).*Cook t, Thompson: House hold Food security in United State,* Summery report of food Security.
- https://www. Fao.org, (2007). *Climate Change and Food Security: A Framework document. Food and Agriculture Organization of the United Nation, 2008.*
- https://www. National Faimly Health survey.org
- https://www. World Development Bank.org
- https://www. world Food.org
- https://www. world Tarad Origanization.org
- https://www.Food Corporation of India. gov.in
- https://www.National Faood Security Mission.gov.in
- https://www.World Food Organization. org: *Global Hunger Index Food Day 2018.*
- Khatkar, Chaudhary.Bhupendra, Dangi Priya,: 2016; *Production and consumption of grains in India,* Module in food science.
- Kuniyal, J.C. (1989). *Regional disparities in agricultural development in district Nainital.* Unpublished Thesis of Kumaun University Nainital, Uttarkhand, pp. 238-250.
- Leduc B,Shrestha A.,Gender and Climate Change in the Hindukush –Himalayas: Nepal,case study report ,International Center for Integrated Mountain Development (ICIMOD),Kathmandu,Nepal,2008
- Maxewell, S. and Frankenber, T., eds. (1992). *Household food security: concept indicators and measurements: A technical review. New York*, NY, USA and Rome, UNICEF and IFAD.
- Sen, A. K. (1981). *Poverty and famines: An essay on entitlement and deprivation*. Clarendon press, Oxford.
- Sen, Amartya. 2010: *The Idea of Justice Penguin*. Private Limited New Delhi, pp 17.21-22.
- Thompson, R.J. (1995). *The productivity of British and Danish farming.* Journal of the Royal Statistical Society, 89, part II.
- Tiwari PC. &Joshi B (2012) Natural and socio economic Drivers of food security in the Himalaya, International Journal of Food Security,2012,4,195-207,DDI:10.1007/s12571-012-0178-z
- World Bank, (1986). *Poverty and Hunger: Issues and Options for food security in developing countries*. Washington DC.