

Impact of Climate Change on Cropping Pattern in karnataka

Dr. Subhashchandra Jetteppa Malled

Dept. of Sociology, Gulbarga University, Kalaburagi, 585106.

E-mail: subhumalled@gmail.com

Abstract: *Climate change is changing crops and food production in the state of Karnataka, which has the second largest rain-fed agricultural area in the country. With an eighteen-year cycle, the state's average yearly rainfall is declining. Detail-Oriented Research Methods The eastern districts of the state depend heavily on the combination of the northeast monsoon for the final rainfed crop of the southwest monsoon to derive their average annual crop. As a result, individual agricultural growing areas and growing seasons are changing. Due to the change in July, the usual sowing season rains are delayed. In many places, the time of greatest water readiness throughout the growing season for most crops is between late September and early October.*

Key Words: *Climate Change, Crops, Rainfall, Productivity.*

1. INTRODUCTION:-

Food & Agriculture Organization study suggests that cotton, tobacco, and other pulses grown in Karnataka's major cash-yielding crops, planted by men and women, are different from household food crops. Reduced crop yields, rising temperatures, saltwater intrusion, and floods are some of the ways in which farmers experience a more unstable climate system in daily life, at what point are they ready to grow in the event of escalating climate crises and what is the source of the crops being able to do on their own terms. (Klinenberg, Araos, and Koslov 2020) Calculation of the optimal crop growing season is consistent with initial climatic conditions, since climate change does not imply any temporary changes in the growing season in future scenarios, used to classify the climatic variables into maize agro-climatic environments, it is important to compare the environmental changes with the conventional current spatial extent. (Yan 2017) Including first crop use, the entity asks farmers for information on whether they have any products from the crops, but are unable to sell or distribute them after the harvest, as well as any water flows or raw material contracts received. (Rathore and Khanna 2021) Respondents' experience of crops affected by climate change was studied, statements related to crop loss were made by keeping agricultural experts. He was introduced for an interview. (Iii 2004) State crop certification and seed quality certification, testing, labeling, and enforcement agencies are functioning 24 hours a day in several states. As per Seed Act, 1966, sold in the market, The seed is tested by seed analysts who are technical professionals under the crop quality standards and seeds. The label should contain the minimum required seed quality requirements. In this context, a single monitoring system is required to export seeds to the international market in the next ten years. (Agriculture 2016)

Karnataka has been taken as the study area for the purpose of assessing and evaluating the status of farmers and their crops in response to climate change, a long-term detailed study of crop and farmer response to climate variation as a whole. (Anglong and Hasao 2016) also caters to the demands of various government and then non-government organizations involved in the agricultural industries of the state and nation. The e-publication includes information on state-wise agricultural productivity and production, market prices, terms of trade, price support, domestic grain procurement, and crop marketing. (Ashish Bahuguna 2014) Tube wells, canals, and rainwater are the primary sources of village irrigation. The Kalaburagi district is ideal for better and more crops; the main crops of some of the selected villages include wheat, saji, rice, jowar, bajra, saros, sugarcane, mustard, soybean, and pulses, among others. (Conditions n.d.) examines the potential effects of climate variation on the yields of the three main rain-fed crops grown in Karnataka—maize, sorghum, and groundnut—and makes recommendations for mitigating risks and enhancing long-term resilience. From the Karnataka Meteorological Department, we examined historical weather crops. In addition, we predicted temperature and precipitation trends for the future. (Engel 2014)

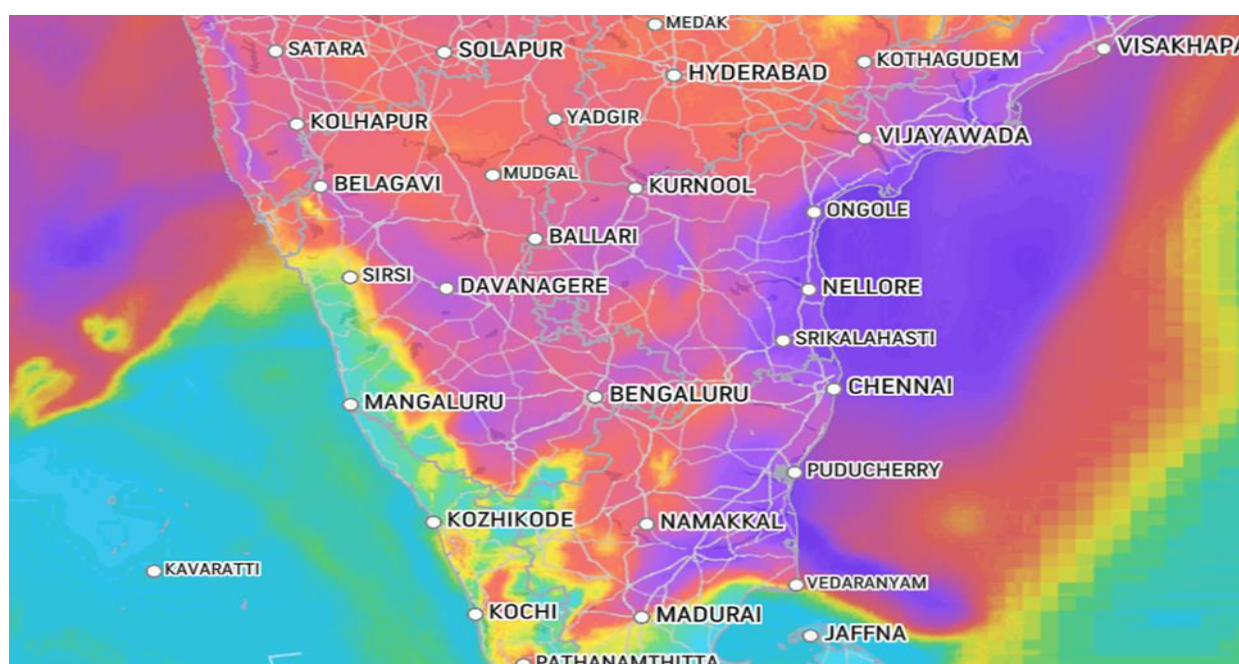
2. LITERATURE REVIEW:

The people of Karnataka are currently suffering from a drought that has reduced large areas of the state to dustbowls, killed crops, and evicted farmers from their property. There is a good chance that things will get worse, Strong proactive actions are required to lessen the susceptibility of croplands and farmers as cyclical droughts are predicted to become much more frequent as the result of the consequences of global climate change.(Mullard 2005) We used time series data on district crop yield and rainfall data to estimate the impact of rainfall on the yield of various major crops in the state, but the time series may have the unit root, so, in the first step, we considered each phase observed by the farmers.(About and Change 2011) Fighting climate variation is a difficult task that will not happen overnight, To bring about meaningful changes in how farmers farm, reaching the 1.5 °C roadmap will take an industry-wide effort and the cooperation of consumers, farmers, industry actors, investors, and regulators.(Anon 2020) Farmers expressed a reduced number of rainfall days and increased variability in intensity and distribution, While designing and implementing conservation agriculture and planned farmer activities, this study needs to focus not only on technical aspects but also on non-technical aspects including climate and social dimensions.(Kumar and Shivamurthy 2015) With an exploding factory population of industries and farmers, natural resources like forests are being rapidly exploited and destroyed to meet the demands, resulting in increased demand for food and fodder, climate change worsens the situation by reducing dryland, Karnataka's crop yields and decreasing rainfall, largely attributed to the rapidly changing climate and population.(Latha, Gopinath, and Bhat 2012)

Compared to development, the notion of climate change and its vulnerability to peasant agriculture has been criticized as unworkable, the fact that the environment of states has undergone change—the susceptibility of socioeconomic systems to the causes and effects of environmental vulnerability, should begin to catalog various crop research in state evolution.(Panda 2009) In the arid and then semi-arid region of Karnataka, particularly in the state of Karnataka, crop yields are predicted to decline significantly, To ensure that regions successfully address climate change concerns, it is critical to examine the effects of climate change on agriculture in the watershed, Although the effects of climate variation on agriculture have been widely studied, developing effective policies to mobilize farmers to face the challenges of climate change is still necessary to understand these impacts and farmers' adaptive responses to them.(Mohanraj 2014) The use of irrigation, better seeds, chemical fertilizers, pesticides, and machinery has increased labor productivity and crop yields for farmers, transforming food production in many sections of a world in the current century. Regional price and crop production differences are often accounted for with the help of macroeconomic policies and food income; Nevertheless, when climate change reduces agricultural production in regions, widespread reductions in supply lead to major increases in local food costs(Brown, Hintermann, and Higgins 2009).

3. Objectives :

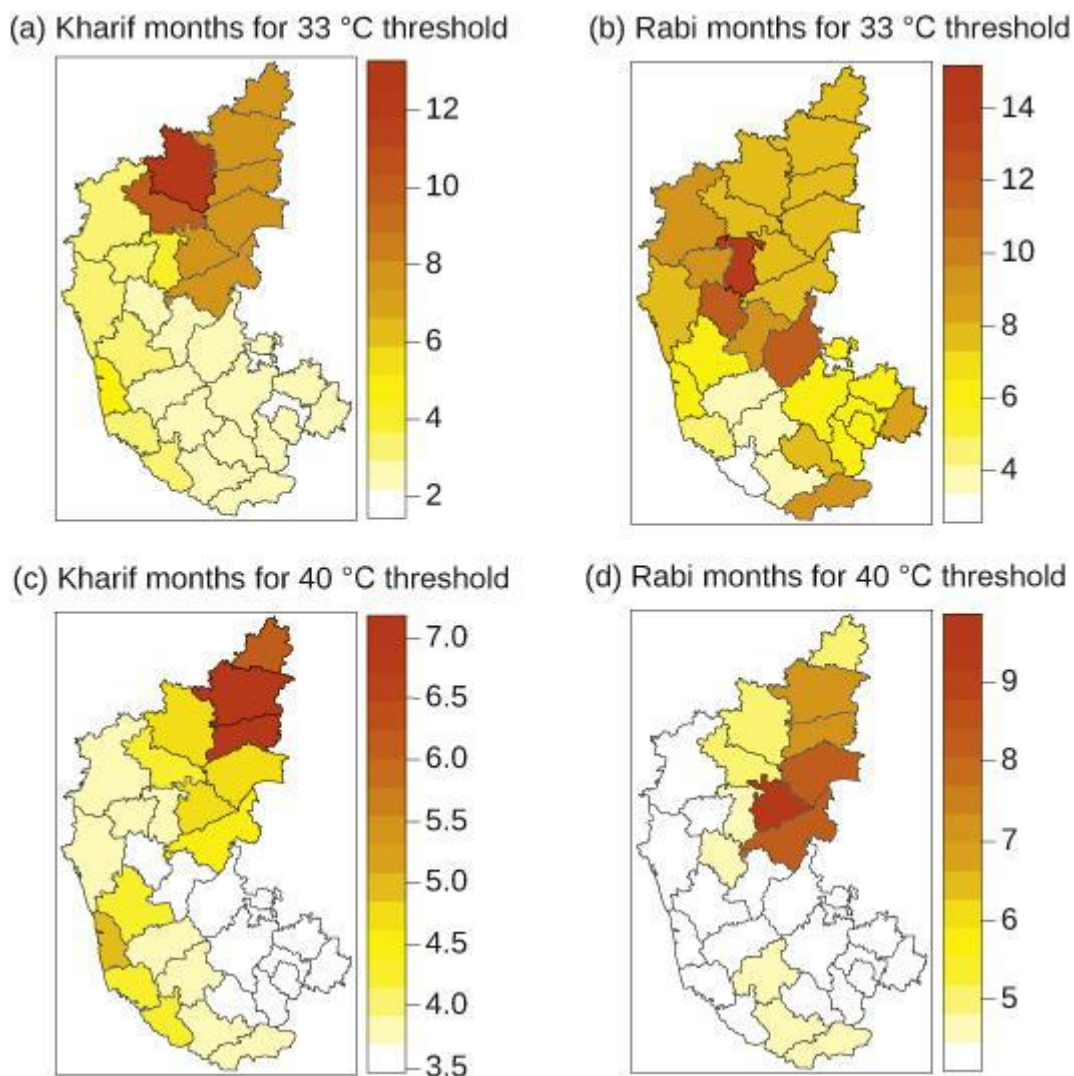
- To study the shift in cropping pattern due to climate change



Accu Weather Bengaluru, Karnataka 26°C

4. METHOD:

The results of the farmers' credible work Karnataka - A Study on Crops Farmers' Response to Climate Change.(Anon 2011) The state of Karnataka was purposively selected for the study because it records the most, Farmers Agricultural Scale Study is based on primary sources of information, secondary data includes season and crops report, statistical summaries, state government and central government published and unpublished farmer data.(Shashidhara 2017)



Karnataka seasons climate scenario in Crops

5. ANALYSIS:

S. L No	District's	Major Corps
1	Bengaluru Urban	Ragi, Vegetable
2	Bengaluru Rural	Ragi and Maize
3	Tumkur	Ragi, groundnut
4	Ramanagara	Ragi, oilseeds
5	Kolar	Ragi, Paddy
6	Chickballapur	Ragi and Maize
7	Chitradurga	Ragi Groundnut Maize
8	Chamarajanagar	Maize
9	Davanagere	Peddy and Maize
10	Mysuru	Paddy, Ragi, Maize

11	Manday	Sugarcane Peddy, Ragi
12	Vijayanagara	Sorghum, maize,
13	Ballari	Maize, Sorghum, paddy
14	Yadgir	Cotton, paddy, Sorghum
15	Kalaburagi	Sorghum, maize
16	Bidar	Soyabean, oil seeds, Sugarcane
17	Raichur	Paddy, Sunflower, Maize
18	Vijayapur	Maize, Sorghum, Wheat
19	Dharwad	Sorghum, Maize
20	Bagalkot	Sorghum, maize
21	Gadag	Sorghum, maize
22	Haveri	Maize, Paddy, Sorghum,
23	Koppal	Sorghum, oilseeds'
24	Hassan	Ragi, maize
25	Kodagu	Paddy
26	Chikmagalu	Maize,Ragi, paddy
27	Belgaum	Maize, Sorghum
28	Shivamogga	Paddy, maize
29	Dakshina Kannada	Paddy, Vegetables
30	Uttarakannada	Paddy, Wheat
31	Udupi	Paddy, Chickpea

Karnataka District Wise Major Crops

Agriculture				
Year's	Net Area Sown (000 Ha.)	Gross Cropped Area (000 Ha.)	Gross Irrigated (Area 000 Ha.)	Gross Irrigated Area to Gross Cropped Area (%)
1990-91	10381	11759	2598	22.09
2000-01	10410	12284	3271	26.63
2010-11	10523	13062	4279	32.76
2016-17	9855	11779	3548	30.12
2017-18	9895	11994	3639	30.34
2018-19	10664	13551	4745	35.01

Sources : Agriculture at Glance 2015-16

Farmers experience about crops to climate change followed by low category (18.65 %) and the least strength of the respondents was found to fall under high category (17.10 %) of experience about climate change. The ranked of statements, the experiencing change in rainfall pattern was found in 1st position followed by 2nd position 'feeling extreme heat' and experiencing the change in monsoon pattern was found in 3rd position. The observing depletion in groundwater level and experiencing the frequent occurrence of droughts was found in 4th and 5th positions respectively while migration of people from agriculture to non- agriculture sector was found in 6th position.

6. CONCLUSION:-

A model of crop adaptations is used to analyze whether farmers are successful in mitigating the impact of climate change, with internal adaptation favoring homogeneity in the face of interannual climate changes and more variability in favor of external adaptation. Attributing this to a form of adaptation is absurd because the absence of adaptation does not imply that farmers have fully adapted, however, there is little evidence that adaptation and evolution should be seen as one process.(Sati 2016) Climate change may benefit farmers' crops, but crop yields will decline, which will affect production, increase in prices of crops and pulses, decrease in cereal consumption and reduce caloric intake, which will affect farmers' lives, various services to farmers for Karnataka, for better functioning and quality agricultural services. Agriculture center should be available to provide.(Malled and Jaganath 2021)

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