RESEARCH REVIEW JOURNALS
Volume-04
Issue-02
February-2019

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com[UGC Listed Journal]

Effect of Land Use Pattern and Climate Change in Agriculture in Hilsa Subdivision, Nalanda

[1]Rajesh Kumar and [2]Dr Ramawtar Yadav

[1]Research Scholar, Magadh University, Bodhgaya, Bihar
[2]Associate Prof & Ex. Head Dept. of Geography (P.G. Centre) R.L.S.Y. College Bakhtiyarpur, Magadh University, Bodhgaya, Bihar

ARTICLE DETAILS

Article History
Published Online: 20February 2019

Keywords
Climate change, Agriculture, Subdivision

ABSTRACT

In the current investigation, the aim of this research is to assess its effects and an effort has been made to analyze the factors responsible for changes in land use pattern and effect of climate change issues of relevance in agriculture. The research study was carried out in the Nalanda (Hilsa subdivision) district of Bihar (India), commonly known for its rich wildlife, birds and sanctuaries and immense agricultural activity. The research is done from gathering the data from the households of this district approximately 975 households. Land use is the fulfillment which the homestead populace gets from the sort of horticulture; build up the arrangement for future creation and commitment to national needs. Land use is a topographical idea since it includes explicit regions. The investigation of land use shapes a huge piece of geology and has accepted a position of pride in the field of applied topography. Climate change is the worms that mankind faces the most puzzling and confusing can of. In the past, many of these climatic disturbances have arisen by natural causes. Most climatic changes experienced by humans are likely to result from anthropocentric activities. They are also been stated as stakeholders (Stakeholders are those that have interests as individuals or member of a party in a specific decision). The data is gathered mainly on the questionnaire basis.

1. Introduction

There are significant territorial varieties in the general land utilization of region due to landform decent varieties and precipitation in the examination district. It is basic to move from all inclusive statements to particularities in the investigation district, where agribusiness is the main methods for occupation for lion's share of the individuals. Such investigations are central for future arranging. Studies ashore use design has gotten a decent arrangement of consideration from Indian geographers before and keeps on drawing their consideration.

Bihar with an absolute populace of around 116 million individuals is the most thickly populated state among all states framing eastern India and positioned third biggest territory of India as for populace and seventh regarding region. Home to a huge extent (58%) of youthful (underneath the age of 25) populace, the state is positioned at the top as far as most noteworthy extent of youngsters as contrasted and every single other condition of the nation. Bihar is invested with different expanded characteristic endowments. Prolific Gangetic alluvial soil, plentiful water assets, especially ground water assets through and through structures the essential/center parts for improvement of farming in Bihar. The state is considered as goal for second Green Unrest in the nation. A few reports including the National Ranchers' Bonus have accentuated the requirement for quickened advancement of agribusiness in eastern India for making sure about food security of the nation.

Since days of yore, human utilized land to meet their material, social and social needs. In this procedure, they are altering lands in different ways, frequently with known effects on climatic conditions, therefore human prosperity. Change in land use design is a mind boggling marvel which is influenced by a few financial, climatic conditions and institutional components. Innovative changes have additionally broadened change in land use design. Serious development, bringing about changing peripheral land into increasingly beneficial agrarian grounds through capital concentrated development, touched off by innovative changes.(Ramasamy et. al. 2005). An investigation directed by Nadkarni and Deshpande (1997) featured the significance of institutional variables prompting under usage of horticultural terrains, particularly when the individuals utilized in urban zones keep lands inert for utilizing it after retirement or for theoretical purposes. Be that as it may, this isn't correct if there should be an occurrence of flood and dry spell inclined regions, and state like Bihar, where ranchers are monetarily powerless and mechanical development is restricted. In spite of this, the adjustment in land use has occurred in congruity with moving of land towards non-farming employments. Pandey and Tiwari (1987) investigated the elements of land use nad evaluated the move in land use in each state with the assistance of straightforward personality of directly added substance land utilizes changes.

Until further study of any field in a specific area or region, studying physical history without knowing basic physical context is of prime importance, further study of any issue is incomplete. In addition, every region’s growth and spatial panning depends on knowing the region's physical context. While researching land use issues, agriculture, construction, transportation and connectivity etc. depends entirely on the perception of the area's physical set-up. This also helps differentiate the region studied from another field.

Directly the examples are as a rule minutely researched at the territorial or miniaturized scale provincial instead of at the national level. In the perspective on the ongoing augmentation of water system and different offices, the North-Western India and a few pieces of South-India have gotten similarly more

consideration from the exploration works. In Uttar Pradesh and Bihar, research distributions on this part of agribusiness have all the earmarks of being more various than in other piece of the nation. This is on the grounds that the bounty of horticultural assets just as their different use in the area are encouraged by amicable condition and capacity of the individuals to embrace themselves to changes in the natural determinants. Indian geographers have for quite some time been pulled in to contemplate the issues of land use in the nation with the end goal of discovering available resources for logical use of land. Such investigations run from inventories of land use overviews to confined effective or local illustrative records of land use varieties both in existence. A reasonable appraisal of land and its logical use has gotten significant. It is conceivable just if the entire complex of land use is learned at the region, tahsil or even town level by considering the neighborhood physical and financial conditions (Ali Mohmmed 1978); Land use planning is significant for development, the executives and protection of regular assets of a territory. Land use/land spread inventories structure fundamental segment in land assets development and ecological examinations (NRSA).

2. Background of the concept

The word „Agriculture" has been gotten from the Latin word „Ager" which means Land and „culture" which implies development. Along these lines the word „agriculture" implies development of land. Farming is fundamentally a workmanship, science and innovation of development of harvests and rising of domesticated animals for monetary purposes and for the endurance of individuals. Agribusiness is the best accomplishment in the history as it empowers person to remain at one spot and to settle down. Sometime in the past all the individuals of the world utilized the methods of chasing and assembling for the food of life.

With the progression of time, the brain of the people has additionally been formed and that came about into the presence of farming. It has been assessed that horticulture has been begun around 12000 years prior. From that day individuals have begun to live respectively and create their own nourishment for utilization. With the progression of time they understood that for good farming, ripe land is significant and for that reason, they attempt to settle down close to the banks of the waterway where different necessities for horticulture are conceivable.

Agriculture is a pillar of the Indian economy. More than fifty per cent of people in India rely for their livelihood on agriculture. In spite of technological progress and dominance of nature, physical forces closely govern the world's agricultural activities. Two key problems concerning agriculture are now affecting developing countries.

The first is meeting the rising demand for food and providing the agro-products to an ever-increasing population, and the second is the uneven growth of agriculture and the patterns of land use. From a geographical point of view, the land is one of the essential constituents of agriculture. Technology in a rapid process has significantly adversely affected agriculture. Owing to urbanization, industrialization and infrastructural growth, the majority of the area that is more suitable for agricultural purposes is now under various land uses, causing agricultural land to decline.

3. land use and climate change's effect in agriculture

The study of land use design is of prime worry to geographers to know the connection among man and regular habitat (Tripathi and Vishwakarma, 1988). Land use is a significant concentrated especially applicable to farming topography. As indicated by J. L. Buck, Land use is the fulfillment which the homestead populace gets from the sort of horticulture; build up the arrangement for future creation and commitment to national needs (Zuated 1951). Land use is likewise identified with preservation of land starting with one significant utilize then onto the next general use (Nanvati, 1951). Land use is a topographical idea since it includes explicit regions. The investigation of land use shapes a huge piece of geology and has accepted a position of pride in the field of applied topography. As indicated by Symons(1978) the land use study shapes the circle head for the development of geology into the applied sciences as guides of land use have been perceived as basic apparatuses of territorial arranging and advancement.

Climate change is the worms that mankind faces the most puzzling and confusing can of. In the past, many of these climatic disturbances have arisen by natural causes but it is clear from scientific research that most climatic changes experienced by humans are likely to result from anthropocentric activities. As a result, major threats from climate change are affecting the entire world, and reducing the effects and adjusting to climate change is top priority for humanity. As environment is obviously changing and very likely to continue to change, even comprehensive attempts to curb greenhouse gas emissions can only delay, not stop climate change.

According to Lillesand and Kiefer (1987); "The word land use applies to human activities related to particular pieces of property, evidence present on the surface of the earth." Land utilization research can be defined as leading with problematic situations where people in a given locality are in the process of transforming from activities that involve certain property. Jainendra Kumar, (1986) described land use as, at a given time and space, surface utilization of all developed and vacant land at a particular point.

Environmental change will have wide-extending consequences for the earth, and on financial and related segments, including water assets, farming and food security, human wellbeing, earthbound biological systems and biodiversity and beach front zones. Changes in precipitation design are probably going to prompt serious water deficiencies as well as flooding. Dissolving of icy masses can cause flooding and soil disintegration. Rising temperatures will cause shifts in crop developing seasons, which influences food security, and changes in the circulation of ailment vectors putting more individuals in danger from ailments, for example, jungle fever and dengue fever. Temperature increments will seriously build paces of termination for some territories and species (up to 30 percent with a 2° C ascend in temperature). An ascent in outrageous occasions will have consequences for wellbeing and lives just as related ecological and monetary effects.

Due to the speed at which change is occurring because of worldwide temperature rise, it is critical that the weakness of creating nations to environmental change is decreased and their ability to adjust is expanded and national adjustment plans

are actualized. Future helplessness depends on environmental change as well as on the sort of advancement way that is sought after. Hence adjustment ought to be executed with regards to national and worldwide practical improvement endeavors. The worldwide network is distinguishing assets, instruments and ways to deal with help this exertion. Adjusting to environmental change involves taking the correct measures to diminish the negative impacts of environmental change (or endeavor the positive ones) by making the suitable changes and changes. There are numerous alternatives and chances to adjust. These range from innovative choices, for example, expanded ocean guards or flood-confirmation houses on braces, to conduct change at the individual level, for example, decreasing water use in the midst of dry season and utilizing bug spray splashed mosquito nets. Different methodologies incorporate early admonition frameworks for extraordinary occasions, better water the board, improved hazard the executives, different protection alternatives and biodiversity preservation.

4. Objectives of the study

The objectives of the study are as follows:

- This study also clarifies that how does the climate change effect in agriculture at Hilsa subdivision, Nalanda
- This study articulates about the land use issues in agriculture and connectivity etc, depends upon the perception of the area's physical set-up.
- The study has a brief methodology about the climate change effects in agriculture.
- The study of land use design is of prime worry to geographers to know the connection among man and regular habitat.
- The investigation of land use shapes a huge piece of geology and has accepted a position of pride in the field of applied topography.

5. Research Methodology

The ongoing research is focused on analyzing data collected from the secondary sources of data collection on land use trends and modifying the impact of climate on agriculture at Hilsa sub-division, Nalanda. Nalanda district is one of the 38 other Bihar state districts, India. It is the state's 18th largest District. It is named Nalanda after the famous university and the oldest university in the world "The Nalanda University" located here, which has become famous for religious tourism and cultural heritage sites, since it is frequently referred to in Jain and Buddhist scriptures and therefore blessed with rich and glorious history.

The analysis is an attempt to examine the views of local people of the Hilsa subdivision, Bihar district of Nalanda on climate change and the impact of land use on agriculture. Data from 975 households in this district were gathered.

It is also surveyed that the heads of different district administration agencies, who are significant adaptation actors-who have the current and knowledge of dealing with and adjusting to climate change and severity.

Adaptation happens through public policy formulation and stakeholder decision taking. Evaluating stakeholders' ability to cope with and adapt fundamentally to climate events to identify current and possible future vulnerability. The aim of this survey was therefore twofold-first, to survey stakeholder expectations of their capacity to adapt to the changing climate and second to identify the knowledge needs of stakeholders regarding climate change adaptation and land use in irrigation.

Who are Stakeholders?

The stakeholders are those that have interests as individuals or as members of a party in a specific decision. They are individuals who control or may control a decision, as well as those influenced by it. For this report, stakeholders have been identified as 1) those affected by climate change; 2) those most effectively placed to advance adaptation. The data and information needed were gathered from a direct field analysis based on the results of questionnaires administered in ten selected villages in Bihar district of Nalanda, primarily from Hilsa block of Nalanda, To administer the questionnaires, questionnaires were deliberately given to household heads over the age of thirty-five years. More experienced and mature farmers were given questionnaires because they are better at separating climate change from weather conditions that are merely inter-annual variations. A total of 300 questionnaires were given to each of the villages, and only to the heads of households who were willing to receive questionnaires. The crucial reason for this decision is to pay attention to those more concerned about the incidence of climate change. Around 15 to 20 minutes were spent completing one questionnaire.

The study was conducted face-to - face with a response rate of around 98 per cent. Of the 100 questionnaires given to each of the villages, some were ignored because not all were returned or answered fully. For administrators the questionnaires were filled out by group of five participants. The volunteers met with participants to explain the study and the questionnaire’s intent. The questionnaire may be answered by the donor, or filled out individually just once. This questionnaire contained 21 questions, mainly multiple-choice, but also some open-ended questions. The queries were about the general attitudes of stakeholders about climate change, their needs for climate knowledge, the future effects of climate change and its importance, their current preparedness for climate change and its impacts, the coverage of climate change concerns in current plans, and the need to react and the steps required to be taken. The questionnaire was addressed by 25 officials from the central and state administrative services. Answers were gathered and processed in a File. A simple and subjective classification scheme coded out open questions.

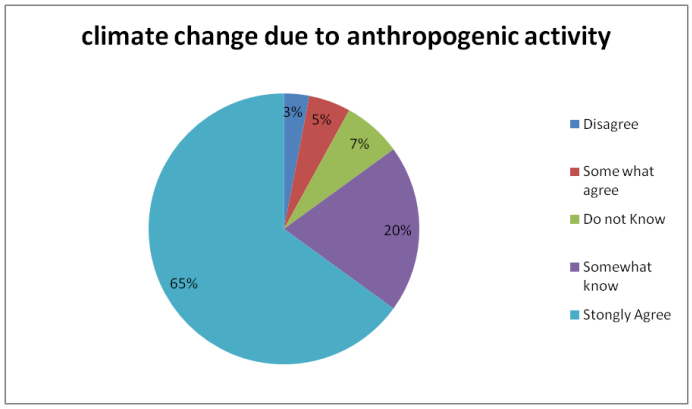

Chart 1 is village environment changing in Bihar?

Approximately 80 per cent of the village inhabitants surveyed was farmers, including those who claimed not to be farmers engaged in small-scale farming activities.

• 57 % of respondents were males while 43% were females.

• Between 35 and 50 years, 74 per cent of respondents dropped.

• Remaining 26 percent fall between 51 and 65 years of age.

Considering environmental change issues, most respondents (65 percent) (Fig . 1) strongly agree that the environment has changed over the years due to human activities such as agriculture, burning, deforestation, unplanned construction, urbanization and industrialization.

Approximately 86.5 percent of traditional farmers studied in different villages agree that climate change has led to various forms of crop infestations there by reducing crop quality and quantity. In turn, as agreed by more than 90 per cent of respondents, there is a significant increase in the cost of food crops.

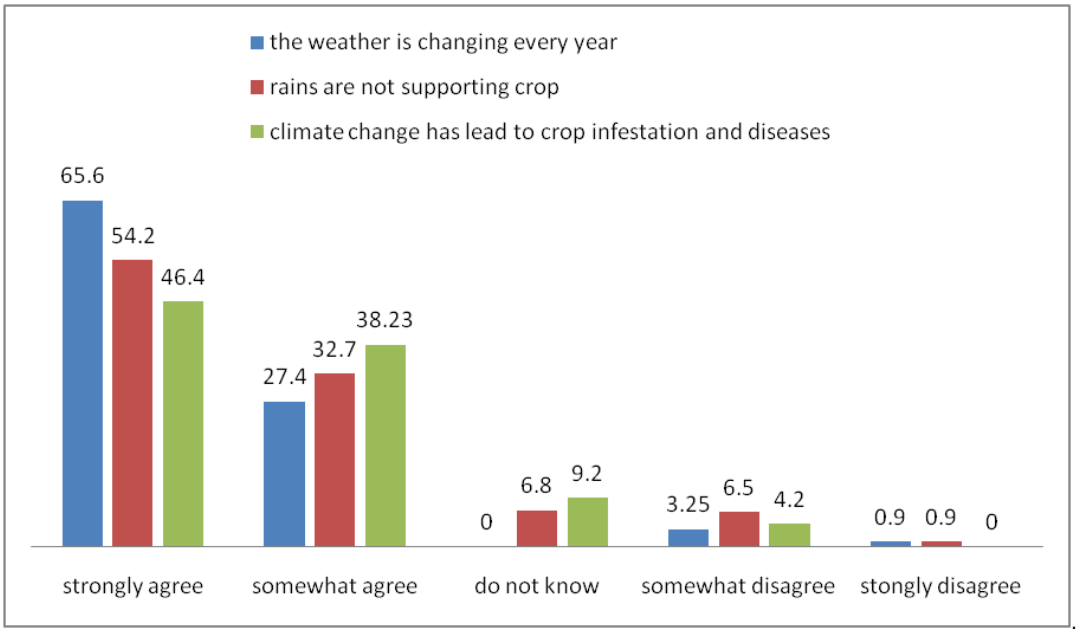

Chart 2 Change in rainfall temperature and overall climate

Approximately 80 percent of respondents said climate change is a serious environmental issue that needs prompt attention. In evaluating climate change issues, 78 percent of respondents agreed that especially climate change is evolving due to diverse human activities and 75 percent strongly agreed that temperature has risen over the past few decades as shown in chart 2. In the same vain, 81 per cent of them said that with varied rainfall anomalies, rainfall decreases every year. As shown in Figure 3, 66 % of respondents believe that because of this, the weather and the climate become dry each year affecting human settlement within the study region.

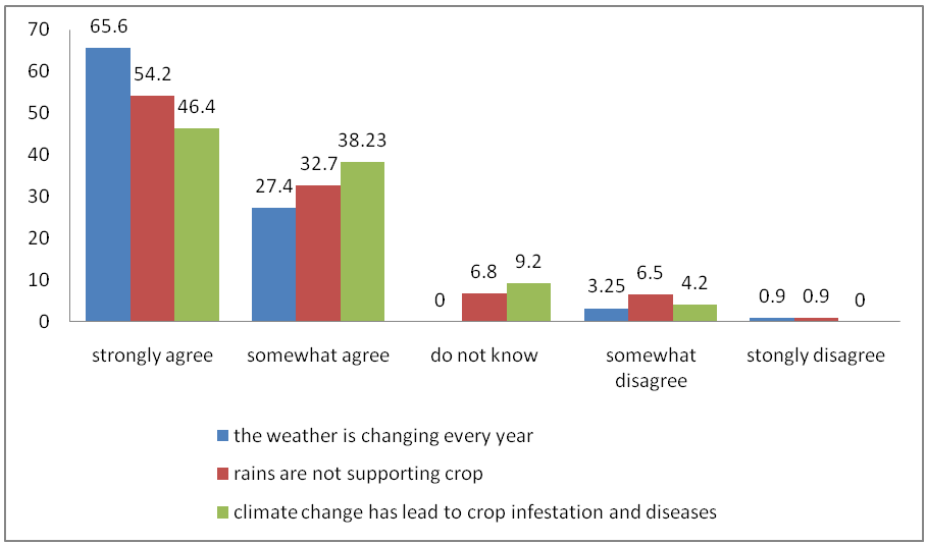

Chart -3 Weather rain and the change in climate

The rainfall declines, and does not support it. Approximately 85 per cent of the respondents strongly reported crop production. Experienced farmers and more elderly people were more likely to raise the temperature and to decrease the amount of rainfall in chart 3. They reported from their experience over the years that less rainfall occurs, more likely to see changes in the timing of the rains and more likely to see a shift in the frequency of droughts and floods as well as crop infestation and decline in production.

6. Conclusion

The detrimental effect of land use / land cover change has been documented in several texts and a global desire for better land use / land cover planning has been made. The rapid population growth at the expense of forest and water sources has caused an increase in the percentage of buildup area and cropland. It has been shown in the present study that the development of buildup area and croplands is not at the expense of dense forests and water sources but at the expense of fallow land and scrub forest. Instead, the area covered by dense forest has increased in hilsa subdivision in the last twenty years and it is a good sign.

The findings of this study show that the threat of climate change for traditional farmers is more to health , food supply, quality of biodiversity and accessibility of fuel wood than to businesses and the instigation of disasters. In the study region, indigenous people who adapt to climate change strategies include planting different crop varieties, growing different crops, increasing the amount of land put into crop production, turning to irrigation cultivation, using chemical fertilizers and improving water maximization. Factors impeding the use of quality seed are found to be the non-availability of the desired seed variety and higher quality seed prices. The research showed to a large degree that the indigenous people in the areas of study are taking climate change issues seriously. The perceived impediments to the adoption of modern technique as climate change adaptation strategies include lack of improved seeds, lack of water assessment for irrigation farming.

References

1. Neil Adger W., Arnell Nigel W. and Tompkins Emma L., Successful adaptation to climate change across scales, Global Environmental Change, 15(2), 77-86 (2005)
2. Neil Adger W., Suraje Dessai, Marisa Goulden, Mike Hulme, Irene Lorenzoni, Nelson Donald R., Lars Otto Naess, Johanna Wolf and Anita Wreford, Are there social limits to adaptation to climate change?, Climatic Change, 93(3-4), 335-354 (2009)
3. Neil Adger W., Social capital, collective action, and adaptation to climate change, Der klimawandel, VS Verlag für Sozialwissenschaften, 327-345 (2010)
4. Bihar State Action Plan on Climate Change, Bihar Government, Patna (2015)
5. Brenkert Antoinette L. and Malone Elizabeth L., Modeling vulnerability and resilience to climate change: a case study of India and Indian states, Climatic Change, 72(1-2), 57-102 (2005)
6. Crutzen Paul J., The “anthropocene”, In Earth system science in the anthropocene, Springer Berlin Heidelberg, 13-18 (2006)
7. Directorate of Census Operations, Bihar, District Census Handbook- Nalanda, Series-11, Part XII-B, Patna, 13 (2011)
8. Disasters Update, www.nidm.gov.in Date: 22.06.2016, Accessed 2nd September http://nidm.gov.in/PDF/DU/2016/June/22-06-16.pdf (2016)
9. District at a glance, official website of the District Administration of Nalanda, State Government of Bihar (India), Web: http://nalanda.bih.nic.in/dist_glance.asp (2014)
10. https://www.researchgate.com/pdf/
11. https://www.bihar-state.com
12. https://www.pdf-sources.com/

