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An Economic Analysis of Cropping Pattern Transformation Towards Appropriate Land Use – A Case Study in Wayanad District, Kerala.

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Abstract

An inter-disciplinary research involves in rainfall, water availability, cropping pattern, techniques of irrigation and knowledge base of the farmers is urgently needed. Better cropping pattern will lead to enhancement of production and productivity. Modern agriculture is based on massive state support in industrialized countries. Consequently studies on cropping pattern and land use change posses great academic attention in the present age of food deficit, increasing farm suicides, and agrarian distress. Kerala is a state with several specialties in relation to other states of India with regards to climate, crop pattern, land holdings, ownership and production process. The crop patterns/ crop combinations prevalent in this district are not based in any scientific norms. Therefore scientific crop in patterns suitable for the agro-ecological situation is to be recommended. The study has described analyzed and asses the actual situation of land use in Wayanad district of three Panchayat areas, pointing out the advantages and disadvantages of the existing land use in the district.

Keywords: Cropping pattern, Economic Growth,

Introduction

Agriculture continue to play an important role in Indian economy, as most of the rural people dependent on the agriculture sector, directly or indirectly for their livelihood security. The agricultural sector of Kerala has undergone wide-ranging changes in terms of ownership of land, cropping pattern, cultivation practices, technology and intensity of cultivation during the past three decades. The approach of studies on agricultural changes has been, till very recently, to capture 'physical reality' and 'objectivity'. Realisation has lately come to researchers that 'subjective' reality is also significant. The perception of the rural people on whom agricultural changes directly impinge is therefore the focus of the present exercise.

The study points out that change in cropping pattern cannot be analysed in isolation from changes taking place in the farming system determined by factors such as land ownership, access to resources, labour relations, livelihood strategies, farming practices, traditions and culture. The main causes of the changes may be grouped into (i) population growth and change in family structure, (ii) state intervention through land reforms, acquisition of land, deforestation, public distribution system (iii) modernisation and commercialisation of agriculture, (iv) labour market conditions, and (v) price factors. The impacts of changes are (i) economic (changes in production, farm income, employment, women's participation); (ii) social and cultural (cultivator-labour relation, negative attitude to agriculture, loss of traditional skills, etc.) and (iii) environmental (loss of local varieties of seeds and breeds, and trees, receding water tables, decrease in biodiversity.)

Appropriate utilization of land recourses on the basis of appropriate cropping pattern application not only helps to improve the farmer's income, but also leads to a gradual transformation of self sufficient and monoculture production into market-oriented production.

The study of cropping pattern in different areas indicated that irrigation condition is the main factor that influencing the crop productivity and the numbers of the crop productivity and the numbers of crop cultivation per year for each area. The study has showing a number of basic experiences in the transformation of the cropping pattern in agriculture in the study area.

Origin of the research problem

Agriculture resources considered to be one of the most important renewable and dynamic natural resources. Comprehensive, reliable and timely information on agricultural resources is very much necessary for a country like India as it is the mainstay of our economy. By 2050, the world's human population is expected to increase almost by 75 percent of the present population. In some developing countries, demographic and economic growth will be so rapid that food requirements are expected to reach four to five times the present levels. But can existing methods of land use and management provide the necessary increases in food production. With increasing population, especially in the developing countries, the demand for food and fuel has grown alarmingly. Simultaneously, economic changesand social conditions have undermined or destroyed traditional systems of land resource management. Thus, not only is the land being cropped and grazed more intensively, with rest or fallow periods being drastically reduced or eradicated, but effective systems for maintaining fertility are no longer being applied. The result has been massive soil degradation on a world scale, through loss of plant nutrients and organic

matter, erosion, build up of salinity, and damage to soils structure. Hence the harvesting pattern transformation towards suitable land use a case study in Wayanad district is worth researchable.

Interdisciplinary relevance

An inter-disciplinary research involves in rainfall, water availability, cropping pattern, techniques of irrigation and knowledge base of the farmers is urgently needed. Better cropping pattern will lead to enhancement of production and productivity. Modern agriculture is based on massive state support in industrialized countries. Consequently studies on cropping pattern and land use change posses great academic attention in the present age of food deficit, increasing farm suicides, and agrarian distress. Kerala is a state with several specialties in relation to other states of India with regards to climate, crop pattern, land holdings, ownership and production process.

Review of Research and Development in the Subject

A study on the economics of cropping pattern transformation of Kerala by **Oommen (1963)** deeply examined the cropping pattern of Kerala, which differed from that of India in some significant respects.

SreedaranandRadhakrishnan (1978) studied the factors affecting changes in cropping patterns in Nilgiris district of Tamil Nadu using the date published season and crop respects of Government. The main objective was to study the change in cropping pattern of Nilgiris district.

Ray, George and Singh (1985) need an attempt to study the impacts of changes in cropping pattern of farm income. The study sought to examine the spatial and temporal disparities in agricultural income in India and its reasons with a view to suggest corrective measures for removing regional regional imbalance in agricultural development.

Kumar and Nair, (2004) Land-use changes, and in particular agricultural intensification, affect the biodiversity of managed landscapes. Indeed, a large proportion of the Kerala home gardens have been converted into small-scale plantations of coconut and rubber or cropping systems consisting of fewer crops due to commercialization and fragmentation of land holdings.

In the earlier studies conducted in Kerala agriculture, no detailed studies in cropping pattern transformation towards appropriate land use in Wayanad districts.

Significance of the study

The crop and other land use- land cover pattern of a region is an outcome of both natural and socio-economic factors and their utilization by man in time and space. Land is becoming a scarce commodity due to immense agricultural and demographic pressure. Hence, information on land use-land cover and possibilities for their optimal use is essential for the selection, planning, development and execution of land uses schemes to meet the increasing demands for basic human requirements and well-being. Growing human interventions and disapproving bioclimatic environment has led to transformation of large tracts of land into wastelands. Satellite remote sensing plays an important role in generating information about the latest land use-land cover pattern in an area and its temporal changes through times. The information being in digital form can be brought under Geographical Information System (GIS) to deliver a suitable platform for data analysis, update and recovery.

Its potential contribution of knowledge in the field of social relevance or national importance

The study has tremendous national and social importance. The cropping pattern and agricultural land use system in the Wayanad community block in three panchayaths has been developed to meet the demands of food supply for increasing population. So cropping pattern transformation and land use is the central focus of planners, politicians, bureaucrats and policy makers. The cropped area has been expanded over the land where the physical conditions of cultivation might be suitable. However in this area the land is prone to degrade its productivity and the distribution of cropped area may change temporarily. In order to investigate the temporal change of agricultural land use, satellite remote sensing data can be considered as the most effective data source. In conclusion it can be said that through the concept of sustainable development, we can nourish the natural resources to meet the immediate needs of the present population and requirement of future generations without in any way endangering the ecology and environment. The study applies in equal measure to the various states of the nation since all the states are now confronting problem of the cropping pattern and appropriate land use internally or between states.

With the help of multi spectral, multi data satellite it is possible to prepare land use/land cover map, to analyze cropping pattern and cropping intensity scenario. For change detection study satellite remote sensing and GIS plays an immense role towards the country's future development plan to be executed by decision makers.

Objectives

Analysis of main issues for appropriate agricultural land use in the aspects of land area, land quality, methods of land utilization, forms of cropping pattern and alternative cropping pattern in the study areas.

The specific objectives of this study are:

1. To assess the existing cropping intensity and appropriate land use.
2. Identification of the factors for the changes in cropping pattern and farm practices that have taken place during the past two decades.
3. To evolve optimum cropping pattern appropriate to the region.
4. Assessment of the impact of the change in cropping pattern on the socio-economic conditions of the rural communities.
5. To suggest suitable policy measure to enhance cropping pattern transformation towards appropriate land use.

Methodology

It is an evaluative study to examine the Participatory Rural Appraisal (PRA) approach has been extensively used for collection of information. Statistical survey methods have also been used to fill the data gaps.

This paper is based on both secondary and primary data. Primary data is collected from a survey on agricultural land use and cropping pattern application, conducted in three Taluks in SulthanBathery,Vythiri,Mananthavady closely located in Wayanad district, Kerala. Because

agricultural land area was equally allocated to farmer households, so every household they have all kinds of land with good and bad conditions, high, medium and low positions. Using the slice-based method, four areas used for agricultural production have been defined, namely high land, medium land, low land, and hollow land. The secondary data collected from Books, Journals, Krishibhavan Basic data register, Village office field diary, Panchayath office padhathirekha are used to collect.

Statistical survey

From the region, revenue villages are selected at random and from the revenue villages, farm households are selected by random sampling method. The following items of information were collected through personal interviews, based on a pre-tested interview schedule. To evaluate;Land ownership;Area under different crops;Crop-shifting and its causes,Effects of change in prices of competing cropsCost structure;Income and Expenditure;Labour-absorption;Incidence of pests and diseases; andImpact of climatic changes

Sample Distribution

S.No	Taluks	Revenue Villages	Households	Size of the Sample
1.	SulthanBathery	5	20	100
2.	Vythiri	5	20	100
3.	Mananthavady	5	20	100
	Total	**15**		**300**

A well structured schedule is prepared to collect information about cropping pattern of the respondents. Direct interview technique is administered to elicit information from the respondents. The interview method is the most appropriate method to collect information since cross checking is possible and observations are possible under this method, further this will improve the validity of the data collected for the study.

SPSS package is used for data analysis. Paired T test method was used to analyze wage differences before and after labourers shift to urban area. Excel is used for tabulation and construction of Chart. Garret's ranking technique is used to rank the reasons for urbanization effect on farmers and changing cropping pattern.

DATA ANALYSIS

The present study made an attempt to analyze the changing cropping pattern. The main taluks in Wayanad district for this study. 300 respondents were selected from the different house hold in three taluks to find out the changes in cropping pattern. The collected data were analyzed by using tables, graphs, charts and necessary interpretations have also been done using simple percentage method.

Cropping pattern utilization of land is the major issue of the farming community. Farmer in general is concerned about the quality of land, but they are often tending to the aware of which the land is to be utilized. The key concern in this project is to study the transformation of the

cropping pattern in an agriculturally developing district of Wayanad under the impact of Green Revolution. So the research problem is highly relevant to the present day context.

Among 300 respondents, 72% of them are male and 28% of them are female. It is clear that 86% of the respondents are farmer, 6% of the respondents are employees, 4% of respondents are business people and 4% of the respondents are professionals. The comparison between food crop and cash crop in the year 2013-14, 36.67% of the total cultivation was occupied by the food crop and 63.32% of total cultivation was occupied by the cash crops.The productivity of the food crop and cash crop during the year 2012-13, 2013-14, and 2014-15. In the year 2012-13 food crop have 44.57% in total productivity and cash crop occupied 55.42%. In the next year food crops have the share of 46.13%, in total productivity and 53.86% of the total productivity was occupied by the cash crops. In 2014-15 food crops have the share of 45.61% in the total productivity and 54.35% of the total productivity is the contribution of cash crops.

The cropping pattern of a region or areal unit may be the determined on the basis of areal strength of individual crops. The first, second and third ranking crops of an areal unit may be called as the dominant crops of that unit. These crops if occupying more or less the same percentage of the total cropped area shall be competing for area with each other and farmer will decide which crop may fetch him more profit in a given year and supply and commodity price condition.

Findings, Suggestions, and Policy implications

FINDINGS

1. Agriculture is the main occupation of the people of Wayanad district.
2. Most of the farmers do not have any regular cropping pattern depend upon the rain for the irrigation.
3. More than half of the people are using their own capital for the agriculture.
4. Labour intensive technology is the most acceptable method in Wayanad district.
5. 70% of people are using chemical fertilizer.
6. Farmers are always interested in choosing cash crops for farming, because it is more profitable than the food crops.
7. Govt. aids and subsides lacks the effectiveness. It failed to achieve aimed objectives.
8. Coffee is the most cultivated crop and vegetable are the least cultivated crop.
9. More than 60% of the total crop is cash crop.
10. According the data, food crops shows an increasing tendency and cash crops shows a decreasing tendency in the year, 2012-13, 2013-14, and 2014-15.
11. Total productivity of cash crops is declining
12. Total productivity of the food crops are increasing. Disease and lack of labour is the main problem of food crops.
13. Lack of labour, variation of climate, unseasonable rain is the main challenges faced by the farmer. Price instability is the main problem of cash cro

SUGGESTIONS

- Agriculture sector growth in Wayanad district is possible only though introducing new programmes for reducing the agrarian crisis. Majority of population in Wayanad may be attracted to farming and agricultural credit allied activities
- A wide level awareness programme is needed for encouraging women participation in Wayanad and Extend the programmes of MNREGP in to agriculture,
- Make dams for the irrigation facilities and give more subsidies to the organic fertilizer
- In order to check the price instability. Provide floor price and price sealing
- Adopt more effective measures to prevent pest & disease (pest trapping method)
- Promote food crops cultivation based on the organic fertilizer, it will ensure the food security and cure diseases
- Provide farmers friendly loans and non-interest loans.
- More advanced researches should be conducted by the RARS for the promotion of food crops.
- Problem of labour can be solved through capital intensive technique. So govt.should provide subside for the machines which can be used for the agriculture.
- Adequate testing of soil in specific periods
- Reforming the agriculture practice to be less harmful to forest and forest re-generation.
- Provision of governmental guidance and regulation.
- Make the agriculture field wild life friendly.

POLICY IMPLICATIONS

- Research and development programmes should be adopted by the government
- Create a environment in society which respect the farmers .Discrimination against the farmers in all level should be avoided
- The Government should ensure that agricultural development programmes of Krishibhavan have reached to all farmers and adopt crop insurance
- Appoint a commission for studying the far reaching effects of government policies in agricultural sect

CONCLUSION

Agriculture is the base of Wayanadeconomy, especially of NenmeniPanchayath. More than 80 percent of the people in NenmeniPanchayath are farmers. Cropping pattern of Wayanad district has undergone several changes. Cash crops occupied major part of agriculture now.This paper focus on the changes in the cropping pattern in Wayanad. Climatic conditions, price fluctuations, productivity, socio-cultural and political factors are the main reason behind the changes in cropping pattern. At present cash crops are the major crops in Wayanad district than the food crops. More than 60 percentage of total cultivation is occupied by the cash crops .The study concluded that cash crops are the dominant crops in Wayanad.Eventhough the recent data shows that there is a steady decline in the total cultivation of cash crops mainly ginger, paper are on the path of decline. On the other hand except paddy, cultivation of all other food crops is increased. But in the matter of productivity both cash crops and food crops show the decreasing tendency. In short the agricultural sector of Wayanad district is shrinking. In the prevailing cultivation, cash crops are the dominant crops but its total cultivation shows a decreasing tendency, while food crops except paddy show an increasing tendency. In the matter of productivity both cash crops and food crops shows a decreasing tendency

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