

Agriculture landuse – A case study of district Kathua.

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Abstract: Agriculture is one of the crucial sectors of Indian economy. As the population of India increasing continuously but the area under agriculture decreases in present scenario decreasing net sown area is now of the major problem so in this context. In this paper we tried to through light on the agricultural landuse of district Kathua. This paper also aims at to recognize various landuse in study area and tried to provide suitable suggestions to bring more area under cultivation.

Key words: Agriculture landuse; Indian economy; Kathua.

1. Introduction

Agriculture is the mainstay of Indian economy which contributes only 14.1 of GDP at constant (2004-05) prices in 2011-12, its role in country's economy is much bigger as about 58.2 per cent of the population is dependent on agriculture for their livelihood. Agriculture is a primitive phenomenon and has been carried out on sustainable basis (Dube, 1984). In past large number of forest areas, grazing land, fallow land has been converted into agriculture land to support rapidly increasing population, which has caused environment degradation. Land use is the spatial aspects of all the human activities on the land and with the way in which the land surface is adapted, or could be adapted, to serve human needs (Bhatia, 1967). This implies that it is the human adaptation of the land surface which is important for sustainable development.

Agriculture land use includes two distant concepts: first is the functional use of land to meet human needs (e.g. agricultural, recreational, and residential) and second is the form of ground cover (e.g. crops, trees, houses). Agriculture regions may be categorized on the basis of land use. Agriculture land use is the classification of land according to the use made of it. At present India has 23 per cent forest cover, 3 per cent pastures and grazing land, 46 per cent area is under agricultural use, 14 per cent land is barren, 6 per cent land is cultivable waste land and remaining 8 per cent is fallow land. The agriculture land area in India is 46 per cent is much more as compared to world (Singh, 1976).

The present paper has the following objectives:

1. The aim of this paper is to study the land use of district Kathua of Jammu and Kashmir,
2. To study about the crop ranking of the study area,
3. To study the net sown area,
4. To study the follow land and its impact on livestock rearing,
5. To make a comparative analysis of change in land use pattern in the last ten years,
6. To study the land use problems, and
7. For best and optimum use of land.

2. Material and methodology

2.1 Study site

The study site Kathua situated between latitude 32° 22' 40" N to 33° 12' 40" N and longitude 75°45' 55" E to 79° 04' 20" E and covering 2651 Km² area, is gateway district which links Jammu and Kashmir with rest of India. Kathua is bordered by Punjab in south east, Himachal Pradesh in east, Pakistan in south, district samba in west, district Udhampur in north-west and district Doda in north. Kathua District is divided into 8 blocks: - Bani , Billawar, Duggan, Ghagwal, Hiranagar, Kathua, Barnoti and Lohai Malhar. The district Kathua is also sub divided into five tehsils: Kathua, Hiranagar, Billawar, Basholi and Bani.

2.1.1 Demography

According to the 2011 census Kathua district has a population of 615,711. The district has a population density of 232 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 20.38% and literacy rate of 73.5%.

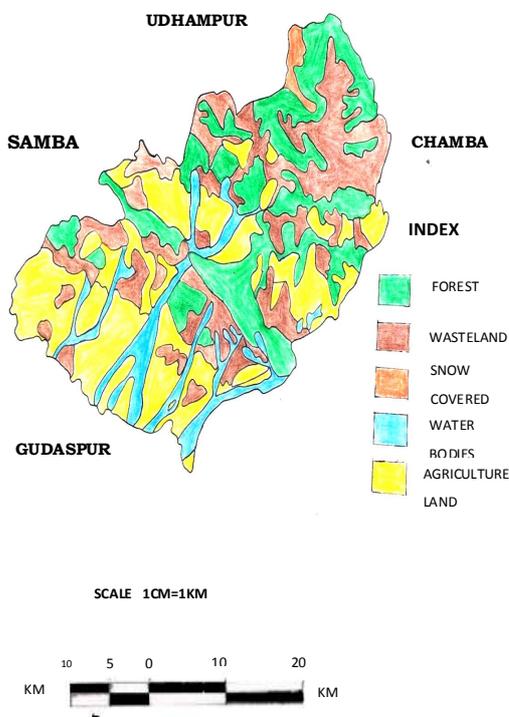
2.1.2 Climate

The District Kathua is situated at foothills of Shiwaliks experiences sub – tropical monsoon climate. The climate of the area is dominated by low temperature, and low rainfall in the winter and high temperature and relatively heavy rainfall in summer. The climate of the study area is marked seasonally. It has long summer fairly hot and showery during monsoon season, short cold season and a season of retreating monsoon. The land use of a particular area

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agriculture department. The concepts and definitions used are the same as prescribed by the union ministry of Agriculture. Some specific terms used are briefly defined below:-

DISTRICT KATHUA LAND USED MAP



3.2.1 Area according to the village papers

Area according to the village papers comprises the reported area or the cadastral surveyed area i.e. the area for which the data on land use classification are available. The estimates of the reported area are prepared by the village patwari. It does not correspond to total geographical area of Kathua district as the revenue department does not maintain the record of such areas as are not fit for habitation. The area maintained by the forest department also does not form a part of the reported area.

3.2.2 Forests

They cover the barren land forests viz., the forests falling outside the forest area demarcated by the Forest department for maintenance.

3.2.3 Land put to Non-Agriculture uses

It consist the entire land occupied by the buildings, rivers, the canals and the other lands put to use other than agriculture.

3.2.4 Barren and uncultivable land

It includes all barren and un-cultivable land like Mountains, Deserts etc. Land which cannot be brought under cultivation except for at exorbitant costs is also included in this category.

3.2.5 Permanent pastures and other grazing land

All grazing lands, whether they are permanent pastures or not, are categorized as permanent pastures and other grazing lands. They also include the common grazing lands in the village.

3.2.6 Lands under miscellaneous trees crops etc

This category constitutes the cultivable land not included in the net area sown, but put some agricultural uses. For example, the land under thatching grasses, bamboo bushes and other groves for fuel etc. not included under orchards fall under this category.

3.2.7 Cultivable waste land

This includes the land available for the cultivation irrespective of the fact, whether it has been taken up cultivation once but not cultivated during the current year and the last five year or more in the succession for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles which are not put to any use. It may be assessed or un-assessed and may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is also included in this category at the end of five years.

3.2.8 Fallow lands other than current fallows

This category includes all such lands as were taken up for cultivation but remained temporarily out of cultivation for a period not less than one year and more than five years due to any of the following reasons:

- Poverty of cultivator.
- In adequate supply of water.
- Silting of canals and rivers.
- Remunerative nature of farming.

3.2.9 Current fallows

This category represents the cropped area, which is kept fallow during the current year. For example, if any nodding area is not cropped again the same year, it is treated as current fallow.

3.2.10 Net area sown

It comprises the total area sown with crops and orchards counting only once, the area sown more than once is the same year.

3.2.11 Total cropped area

Total cropped area represents the total area covered with crops i.e. the sum total of area covered by all the individual crops. The area sown with crops more than once during the same year is counted as the separated area for each crop.

3.2.12 Area sown more than once

It includes the area on which crops area cultivated more than once during the agricultural year and is obtained by the deducting the net area sown from the total cropped area (Table 1; Fig. 1).

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Table 1. Land utilization pattern (2010-2011)

Land utilization pattern	Area (ha)
Reported area Forest	264729
Forest	72732
Land use put to non – agricultural uses	46145
Barren land un cultivable land	33862
Permanent pasture and other grazing land	10881
Land under Miscellaneous trees crops etc.	14270
Cultivable waste land	13989
Follow lands other than current follow	1029
Current Fallow	10725
Net area sown	61096
Total Cropped area	121417
Area sown more than once	60381

Source: Financial Commissioner's Office

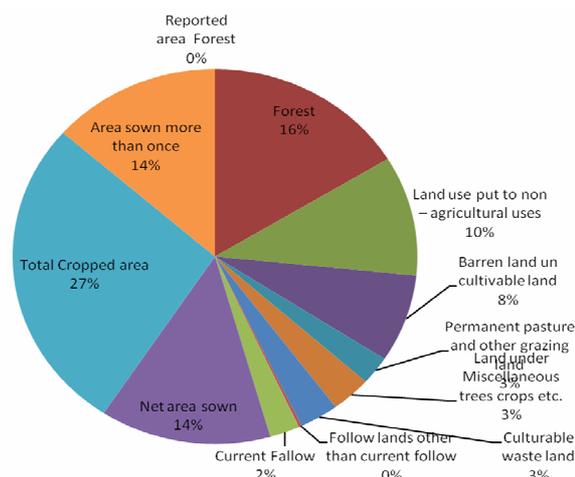


Figure 1. Land utilization pattern (%)

Table 2. Block wise landuse pattern

Name of block	Cultivable Area	Forest	Land put to non agriculture use	Barren & Uncultural land (waste land)
Kathua	6656	6278	9515	5068
Barnoti	6400	5992	1976	4780
Hiranagar	12177	4701	8931	1560
Billawar	9426	19353	13147	4104
LohaiMalhar	5074	10422	7083	2206
Basholi	6810	7213	7721	18172
Bani	3601	21344	4389	2891
Duggan	266	1015	315	434

The table 2 shows that the tehsil Billawar has the highest geographical area (49687), while Duggan (2092) has the least geographical area. According to above table the highest cultivable area is in Hiranagar tehsil (12177) and the lowest cultivable area is in tehsil Duggan (266). The highest area under forest is in tehsil Bani (21344) and least forest is in Duggan (1015).

3.2.13 Blockwise distribution of barren & uncultivable land

Table 3. Blockwise distribution of barren & uncultivable land

	Geographical area	Cultivable area	Barren and waste land
Kathua	29450	6656	5068
Barnoti	28090	6400	4780
Hiranagar	29476	12177	1560
Billawar	49687	9426	4104
Lohai-Malhar	26755	5074	2206
Basohli	42461	6810	18172
Bani	32552	3601	2891
Duggan	2092	266	434

In Kathua district there are 8 blocks covering an area of 265100 Km² among the 8 blocks Billawar have an area 49867 hectares (ha) while Duggan have an area just 2092 hectars. All other blocks lie in between Billawar and Duggan in terms of total area. Among all 8 blocks, block Basholi having highest area under barren and waste land (42.78%) due to

hilly terrain which is followed by block Billawar (8.25%) which is also having large amount of area under barren land due to hilly terrain. While Hiranagar block having lowest percentage of area under barren land (5.29%) because of its plain terrain which is suitable for cultivation (Table 3).

3.2.14 Net sown area

It comprises the total area sown with crops and orchards counting only once, the area sown more than once is the same year. The total net sown area in Kathua district is 61096 hectares. The total area under wheat is 54543 ha, rice 31380 ha, maize 24802 ha, other millets and grams 2784 ha, pulses 4053 ha, fruits 24 ha, vegetables 302 ha, other food crops/spices 294 ha, fodder 5465 ha, oil seeds 3856 ha, other non-food grain 14 (Table 4).

Table 4: Net sown area

Food grains	Area under crops
Paddy	31380
Wheat	54543
Maize	24802
Other millets & gram	2784
Pulses	4053
Fruits	24
Vegetables	302
Other food crops & spices	294
Fodder	5465
Oil Seeds	3856
Other non-food crops	14

3.2.15 Ranking of crops

Ranking of crops depends on insight in the geographical reality and cropping structure. The per centage of gross cropped land with the aerial strength of a particular crop reveals the agricultural operation involved, period of peak, labours demand and the opportunities of employment to the farmer's families as well as to the labour depending on them. Ranking of crops also indicates the nature of enterprise i.e., whether the particular aerial units are of traditional subsistent farmers or commercially market-oriented or partly subsistent and partly market oriented farmers. In this method, the first ranking crop, i.e., the crop occupying the highest per centage of the total cropped area in each of the component areal units could be chosen. It may be noticed from Table 5 that Wheat ranks first in all the five tehsil of the district, Rice in second rank. Maize and pulses are major crops. The maize prefers in third and pulses in are fourth rank.

Table 5. Ranking of crops

Crops	% age	Ranking
Wheat	42.67	1
Rice	24.10	2
Maize	19.83	3
Fodder	4.37	4
Pulses	3.24	5
Oilseeds	3.08	6
Other millets/gram	2.22	7
Vegetables	0.24	8
Other food crops and spices	0.23	9
Fruits	0.01	10
Other non food crops	0.001	11

3.2.16 Cropping intensity

There are only two ways to satisfy increasing food and other demands of the countries rising population either expanding in the net sown area or intensifying cropping over the existing area. The population of the country increasing at a alarming rate while net sown area just increased 20% after independence. Thus raising crop intensity is the only viable option to meet the demands of growing population.

Crop intensity refers to rising of a number of crops from the same field during one agricultural year.

$$\text{Cropping Intensity} = \frac{\text{Gross cropped area}}{\text{Net sown area}} \times 100$$

Thus higher crop intensity means that a higher proportion of the net sown area is being cropped more than once during one agricultural year. In Kathua district the net sown area is 61096 while the gross cropped area is 125011. Cropping Intensity of district Kathua is 204.61. Cropping Intensity is higher in the plain areas of the district because in plain areas the net sown area is higher than hilly or mountainous areas.

3.2.17 Agricultural efficiency

Agricultural efficiency is the ratio between output to the input in the agricultural activities. These inputs may includes the amount of man power employed and the cost of investment in terms of irrigation, fertilizers, seeds, pesticides, power, machines etc. agricultural efficiency is reflected in productivity, one way to measure in terms of yield per hacter of land cultivated, where intensive agriculture is practiced and where heavy inputs and man hours are employed. Agricultural productivity is affected by physical, socio-economic, institutional and urbanizational factors besides the attitude of the farmers and their managerial skills. Ranking co-efficient method devised by Kendall to measure agricultural productivity.

Conclusion

Agriculture is the principal source of livelihood for more than 58% of the population of this country. Agriculture provides the bulk of wage goods required by non-agriculture sectors and most of the raw materials for the industries sector.

Agriculture is a critical sector of the Indian economy. Though its contribution to the Overall Gross Domestic Product (GDP) of the country has fallen from about 30 per cent. In 1990-91 to less than 15 per cent in 2011-12, a trend that is expected in the development Process of any economy, agriculture yet forms the backbone of development. An average Indian still spends almost half of his/her total expenditure on food, while roughly half Of India's work force is still engaged in agriculture for its livelihood. Being both a source of livelihood and food security for a vast majority of low income, poor and vulnerable.

During the 12th Five Year Plan, Ministry of Agriculture will focus on sustaining the current momentum by stabilizing food grain production to ensure food security. For sustaining higher levels of production, it is necessary to target new areas of food grain production, while promoting conservation agriculture in the high production areas, to maintain current levels of productivity.

Agriculture is the main source of livelihood in the district as in the rest of the state. The data on agriculture relate to land use, cropping, pattern of holding, off-take of fertilizers, pesticides and other inputs etc. The data are based on the enumeration conducted by the village Patwari, the agricultural census conducted after every five years and on the figures emanating from the day to day activities of the agriculture department.

The agriculture land in Kathua district is 65.50 per cent of the total geographical area which includes 23.04 per cent area of the net sown area and 22.77 per cent area is shown more than once. Cropping pattern of district is typical that the food crops cover most of

the cultivated area. In the study region food crops occupy largest area, which is 89.20 per cent of the total net sown area in 2010-11, which Wheat is leading crop followed by Rice and other food grains that occupy a small proportion of area. Wheat is the main rabbi crop, which is grown from october to June throughout the region. Wheat is rabii crop cultivated in irrigated area and kandi belt. Kharif crop rice is mostly grown in irrigated area. Sugarcane is main cash crop, which is mainly cultivated in guaranteed irrigated area of the region. Among non-food crops fruits, vegetables, oilseeds and fodder occupy a dominant place.

From the above discussion we know about the pattern of agriculture land use and impact on the GDP of study area. We also know about the crop ranking in Kathua District and also the net sown area. We also studied the impact of livestock rearing on agricultural practices. And other land use problems.

In Kathua District, Basohli Tehsil has the highest barren land i.e. 42.79%. For this we have to take the necessary steps to make the land cultivable. We have to take the steps such as plantation, afforestation and

cover the land with grass. Hiranagar has lowest area under the forests. So we have to take proper steps to increase the area under forests.

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