

Agriculture Land use Pattern in Banka District, Bihar

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Abstract

Land use information is very essential for selection, planning, implementation and management of the increasing demands of human needs, sustainable agriculture and welfare of the ever growing population. The aim of the research was to analysis the agriculture land use pattern and to study the agricultural problems in Banka district, southeast part of Bihar. Present study was both qualitative and quantitative in nature and based on primary and secondary data which was collected from Banka. Mixed type of methodology was used to show the different type of land use pattern in Banka district. For this study 105 farmers were interviewed from different parts of Banka. Cartographic and GIS technique was used for chart and mapping preparation. The total study area is about 304.61(in'000ha). The land use on the study area has been attempted based on cartographic mapping of the area consisting of cultivable area, forest area, barren land etc. using the secondary data obtained from department of agriculture cooperation and farmers welfare, Banka district. The result shows that the agriculture cultivable lands area well distributed over entire study area and it covers 160.4(in'000ha) (52.66%). Forest area occupies 43.31(in'000ha) (14.2%), non agriculture land area and barren and uncultivable land covers 41.2(in'000ha)(13.53%) respectively and permanent pasture covers 1.7(in'000ha) (0.56%), current fallow land area covers 3.8(in'000ha) (1.25%), land under misc tree and groves 7.3(in'000ha)(2.40%), other fallow land occupy 3.7(in'000ha) (1.21%) respectively.

KEYWORDS: Agriculture, Crops, Drought, Flood, Land use, Rainfall.

Introduction

Land is basic resource of human society and land use is the surface utilization of all developed and vacant land on specific point at a given time and space. Utilization of land in a particular area is called Land use. Pattern of land use means land types and utilization of land under different categories. It is systematic arrangement of various categories of land on the basis of some similar characteristics mainly to understand and to identify their fundamental utilization in satisfying the needs of human society effectively and intelligently.

Agriculture is the backbone of Indian economy and it contributes a high share of net domestic product by sectors in India. Agriculture land use mainly studies the land under different uses like net sown area, agriculture potential land, fallow land, forest land etc. Today the population pressure is increasing at a faster rate and to fulfill the growing demands for food grain of this population; more land is put under cultivation. Land capability depends upon factors such as relief feature, climate, soil, vegetation, socio-economic and institutional factor. Farmers are growing numerous crops in the field rather

than single crop. The distributional pattern of crops in any region is an outcome of predominance of certain crop or combination of crops. Cropping pattern in study region has undergone an evolutionary process. The soil and other natural environmental factors, along with the socioeconomic factors, affect the cropping pattern in study region. The statistical techniques provide accurate results for the crops production and productivity.

Study Area

The district of Banka is situated $24^{\circ} 30'N$ to $25^{\circ} 08' N$ and $86^{\circ} 30'$ to $87^{\circ} 12'E$ in far south - east of the State Bihar at an elevation of 43m. The eastern and southern border of the district coincides with district Godda of the state - Jharkhand. In west and north east it touches Jamui and Munger district respectively. The district Bhagalpur is situated in the north side of Banka. The geographical area of the district is 305621 hectare i.e. 3019.35 Sq. km. The district head quarter of Banka is situated in Banka town. It comprises of 55% of hilly and 45% of plain area. The climate of the region is Hot Sub humid type.

Objectives

- To analyze the agriculture land use pattern of Banka district, Bihar.
- To study the agricultural problems in the district.

Database and Methodology

Present study was both qualitative and quantitative in nature and based on primary and secondary data which was collected from Banka. Mixed type of methodology was used to show the different type of land use pattern in Banka district. For this study 105 farmers were interviewed from different parts of Banka to know the agricultural problems in the district. GIS technique was used for map preparation. For the present investigation, Banka district is selected as in general and blocks in particular. Simple statistical method has been used for representation of data and analysis of data. Present study mostly relies on the secondary data collected through Department of Agriculture cooperation and farmers welfare, Banka district, Bihar.

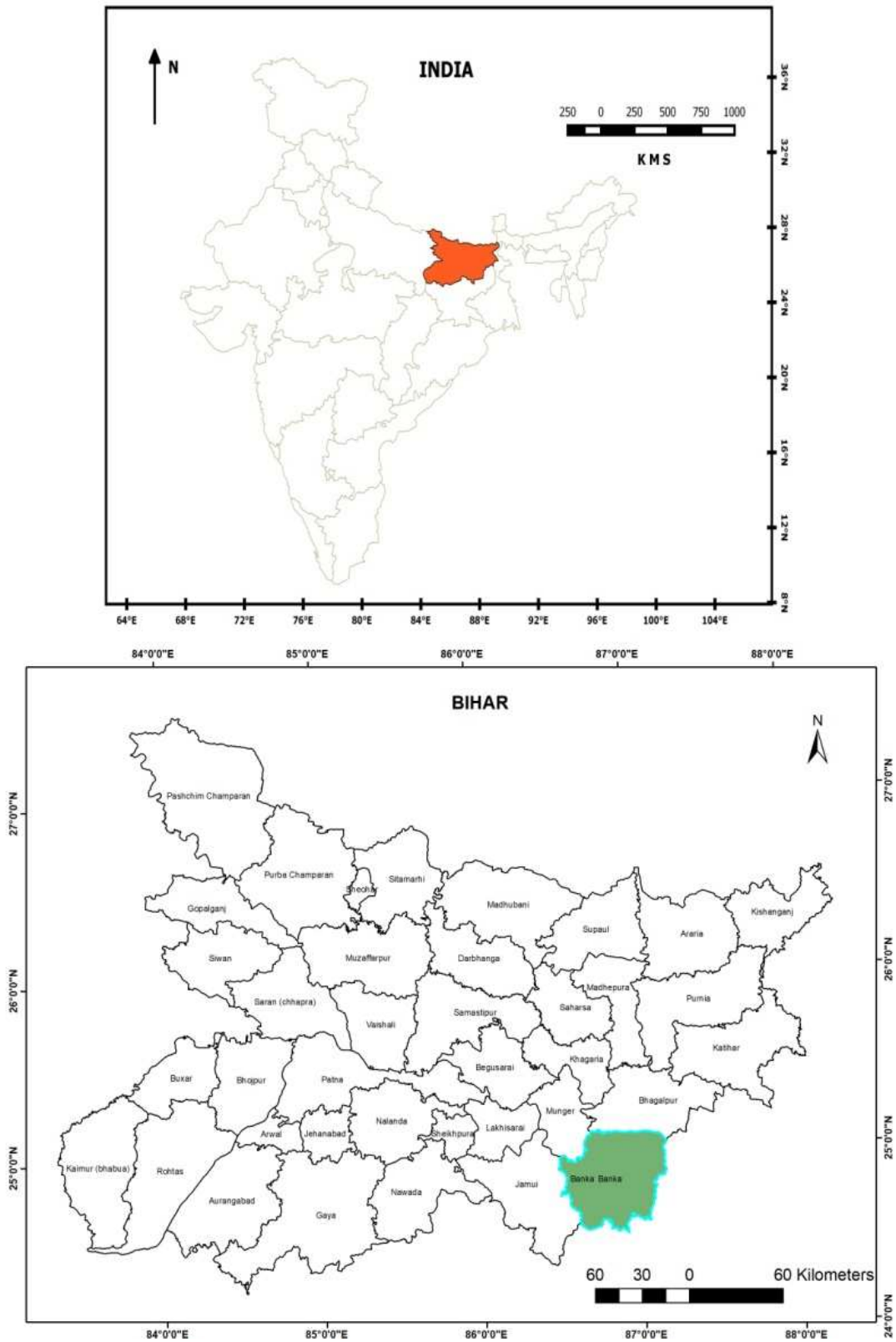


Fig. 1 'a'. Location map of Banka District

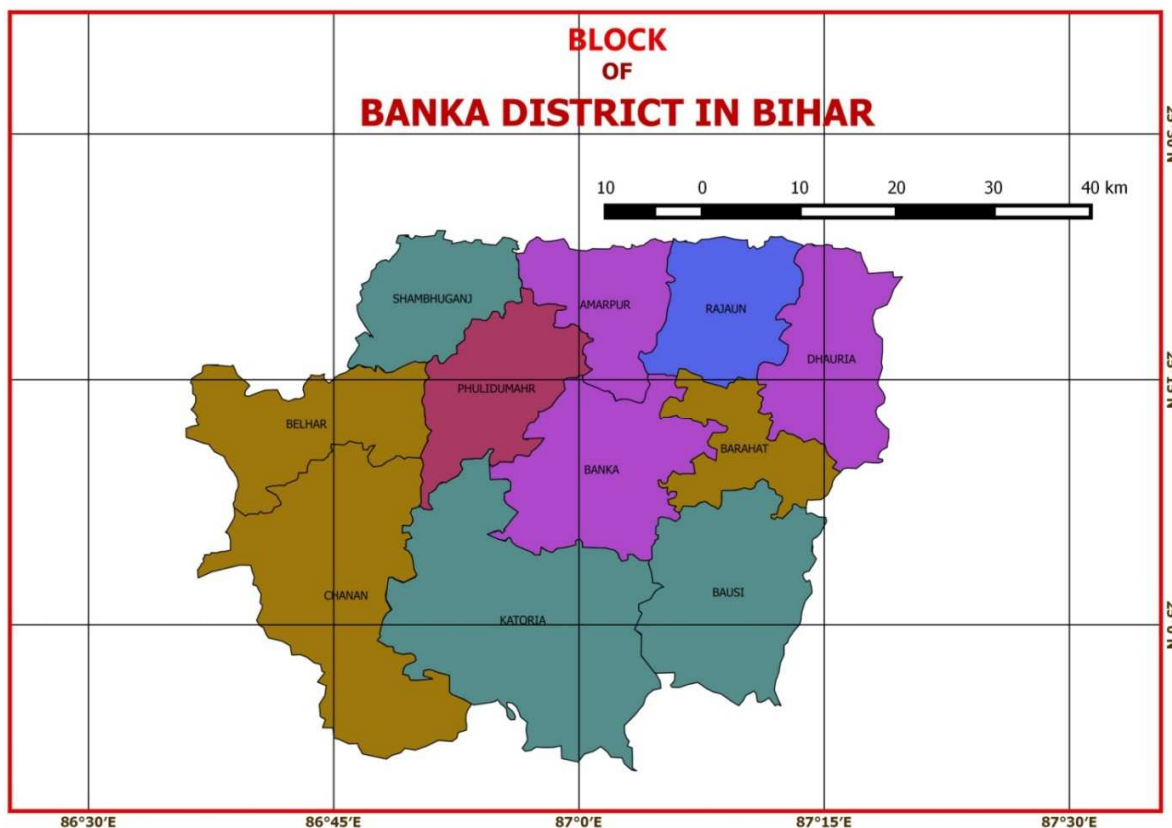


Fig. 1 'b'. Location map of Banka District

Result and Discussion

➤ Rainfall

The study area receives about 1170 mm of average annual rainfall. The winter (Jan-March) rainfall contributes 14.0mm to the annual rainfall; whereas summer rainfall (Apr-May) contributes 88.0 mm to the annual rainfall; summer monsoon rainfall (June-Sep) contributes 903.7mm to the annual rainfall and the post-monsoon rainfall (Oct-Dec) contributes 180.3mm.

Table 1. Rainfall pattern in Banka district

Rainfall	Normal RF(mm)
SW monsoon (June-Sep)	903.7
NE Monsoon(Oct-Dec)	180.3
Winter (Jan- March)	14.0
Summer (Apr-May)	88.0
Annual	1170.0

Source: Department of Agriculture cooperation and farmers welfare, Banka, Bihar

➤ **Land use pattern**

Land is basic resource of human society and land use is the surface utilization of all developed and vacant land on specific point at a given time and space. Land use Land cover mapping Human beings able to define land use and make use of them according to human requirements, usually with the focus on the functional role of land in economic activities. Some important restraints to improved land husbandry were of a socio-economic nature, the study also identified a number of physical research questions related to the impact that changes in soil conservation management on the bench-terraced hillsides can be expected to have on crop water use, surface runoff generation, soil loss and subsequent transport of sediment through the drainage network

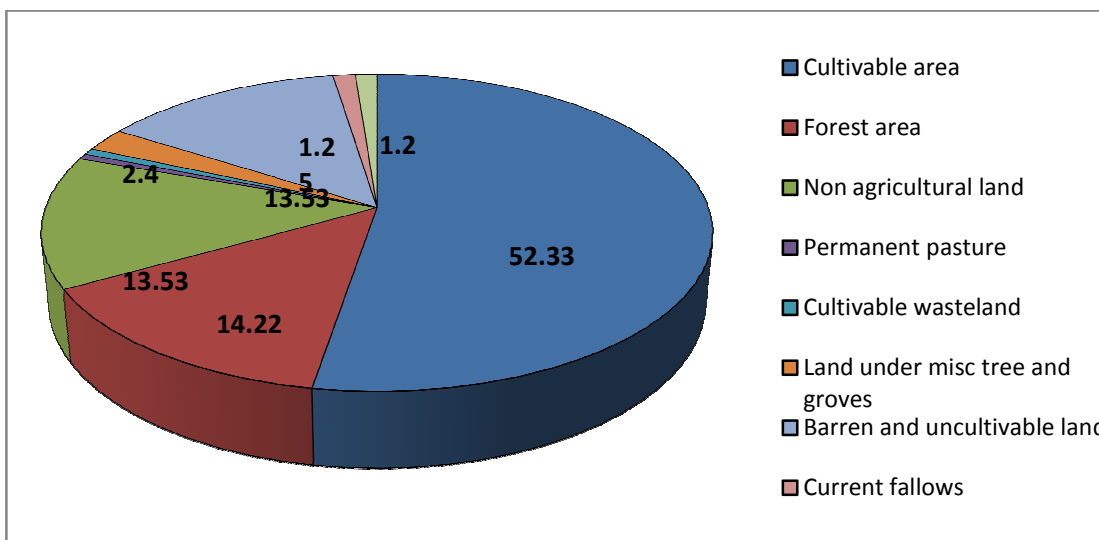


Fig. 2. Land use pattern of Banka district, Bihar
Source: Data collected by the researcher

Today the population pressure is increasing at a faster rate and to fulfill the growing demands for food grain of this population; more land is put under cultivation. Land capability depends upon factors such as relief feature, climate, and soil, and vegetation, socio-economic and institutional factor. Thus to know the land use patterns in Banka district ,an attempt is made in this research to discuss the land use pattern and changes in the land use processes in the study region . Fig. 2. shows that the cultivable lands area is well distributed over entire study area and it covers 160.4(in'000ha) which is 52.66% of total geographical area. Forest area occupies 43.31(in'000ha) i.e. 14.2%, non agriculture land area and barren and uncultivable land covers 41.2(in'000ha) and permanent pasture covers 1.7(in'000ha) respectively. Current fallow land area covers 3.8(in'000ha) i.e. 1.25% of total geographical area.

➤ **Irrigation**

The total Net irrigated area is 115000 hectares. Source of irrigation are canal, tanks, wells and bore wells. Total irrigated area is 127500 hectares. There are total 8 canals for irrigation and area under canal irrigation is 90000 hectares, whereas 445 tanks are there

for irrigation and total area under tank irrigation is 2980 hectares, open wells are 3368 in number and total area under open well irrigation is 7240 hectares, bore wells are 16043 in numbers and total area under open well is 23800 hectares. Area irrigated from other sources is 3418 hectares.

➤ **Soils**

The major soil found in this area is fine sandy loam soil. Other soils found in the districts area sandy soils found on 36130 hectare area (12.30%) of the total area, Coarse sandy loam soils cover 41100 hectares (14.00%) area, fine sandy loam soils cover 112920 hectares (38.45%) area and Clayey Soils cover 103510 hectares (35.25%) area.

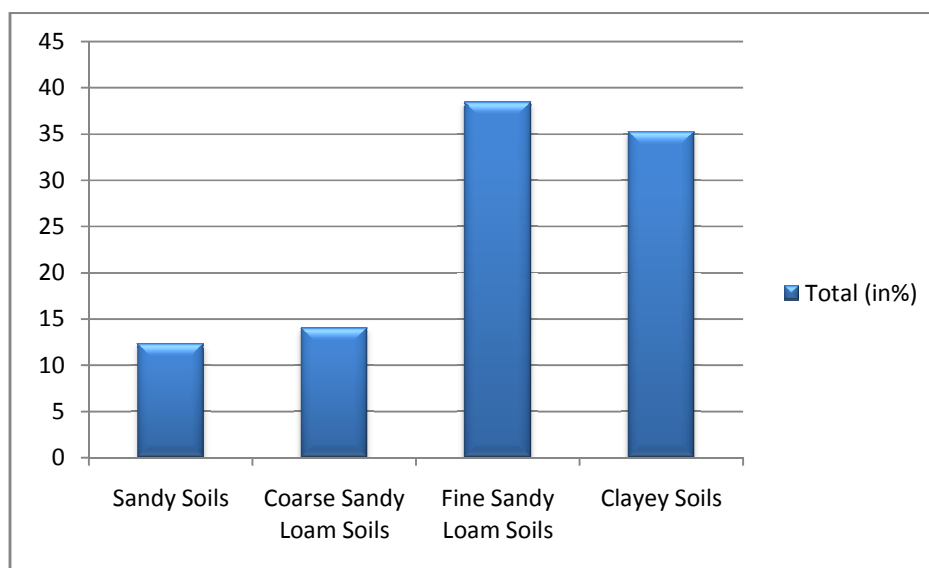


Fig 3. Types of soils in Banka district

Source: Department of Agriculture cooperation and farmers welfare, Banka, Bihar

➤ **Agricultural land use**

The total gross cropped area is 160410 hectares i.e. (41.88%) followed by net sown area is 152300 hectares (39.75%) and area sown more than once is 70400 hectares i.e. 18.37% of the total agricultural land use.

Table 2. Agricultural land use of Banka Districts

Agricultural land use	Area ('000 ha)	Area (in %)
Net sown area	152.3	39.75
Area sown more than once	70.40	18.37
Gross cropped area	160.41	41.88
Total	383.11	100

Source: Data collected by the researcher

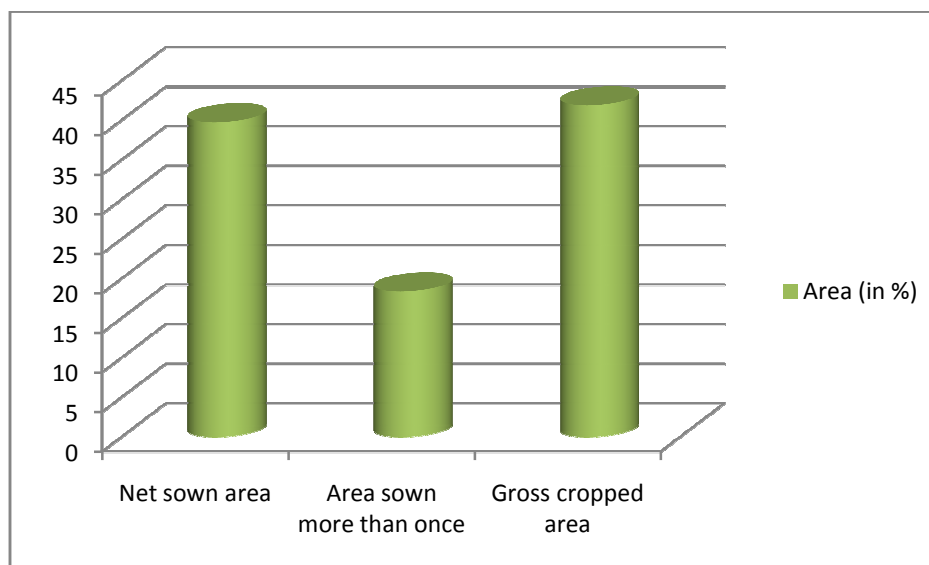


Fig.4. Agricultural land use of Banka Districts
Source: Data collected by the researcher

➤ **Production of crops**

The major crop produced in the districts are rice, wheat, maize, gram, pulses and sugarcane etc.

Table 3. Production and productivity of various crops.

S. No	Crop	Area (ha)	Production (q)	Productivity (q/ha)
1	Rice	104794	1519513	14.50
2	Wheat	45152	695340.80	15.40
3	Maize			
	(a) Kharif	6790	203700	30.00
	(b) Rabi	4040	161600	40.00
4	Gram	4505	34238	7.60
5	Lentil	4030	26195	6.50
6	Arhar	2200	15840	7.20
7	Pea	1031	10670.85	10.35
8	Sugar/Cane	4101	2460600	600.00
9	Rai/Tori	2291	19931	8.70

Source: Data collected by the researcher

➤ **Agricultural problems**

The major part of the district is prone to drought, flood, cyclone etc. Flood is regular in this area which destroys the crops of farmers. Farmers also face the problem of low yield of crops day by day in Banka district due to imbalanced use of fertilizers and continuous use of chemical fertilizers(especially nitrogen in higher quantity), and it ultimately

reduces 20% of grain yield. Quality of water is not very good specifically the problem such as high levels of arsenic, fluoride, saline etc. found in water.

Table 4. Agricultural problems in Banka District

Agriculture problem (Tick)	Regular	Occasional	None
Drought		√	
Flood	√		
Cyclone			√
Hail storm		√	
Heat wave	√		

Source: Data collected by the researcher

Conclusion

The land use data of Banka district in southeast part of Bihar have been examined minutely. This study has revealed that there are changes in many land use cover categories over the year. It clearly shows that land used for barren and uncultivable land as well as for the non agricultural land is increasing due the increase in the population on Banka district in southeast part of Bihar while there are fluctuating trends for other land cover categories. It gives a fairly good understanding of agricultural land use in the district which in turn will be very helpful for local administrative bodies for decision makings in the district.

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