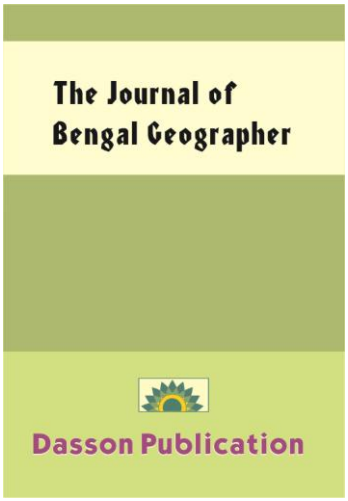
The Journal of Bengal Geographer



Dasson Publication
www.dassonpublication.com

Land use pattern in Haryana: a geographical analysis

Mr. Monu Kumar
Assistance Professor
Dept. Of Geography
Govt. College Meham
Rohtak, Haryana

Abstract

Haryana state is one of the most prosperous agriculture states of India. Here, mostly populations are engaged to agriculture activity. Therefore, Land is one of the most critical recourses for the poor dependent on farming for their livestock. The ever-increasing population together with escalating demands brings extra pressure on available land resources and pushes toward land use change. Change in the land affects directly on the ecosystem and are intimately linked with the issue on sustainability. The challenge for developing countries is to develop land management programms to increase the availability of high quality fertile lands in areas where population growth is high, poverty is endemic and existing institutional capacity is week. Understanding of land use change in relation to its driving forces provides essential information for land use planning and sustainable management of resources. In order to use land optimally, it is not only necessary to have information on exiting land use but also capability to monitor the dynamics of land use resulting out the changing demands of increasing population. The present paper analyzes the existing land use pattern comparing the data of 2001-02 to 2011-12 and change in land use pattern of Haryana state. It also focuses upon the causes behind these changes.

Key words: *1.Land Use Pattern, 2.Change, 3.Forest, 4.Non-agriculture, 5.Barren land, 6.Net Sown area, 7.Pasture, 8.Current Fellow.*

Introduction

Land is the important natural resource, which support evaluation and development all type of life land. Land use especially affected by natural and human factors. It is the results of actions and reaction of the ingredients of physical and human environments prevailing in a region, which acquires some change time to time, and from place to another. A part from the ecological conditions, technological and institutional developments affects the land use pattern in great degree regarding space, magnitude and speed of change. Land has been utilizing by different natural uses since its origin, but man, as occupied with the skill and know–how, is reshaping the uses of land use. Land use involves the management and modification of natural environment into built-up environment such as field, pasture, industrial and settlement. It has also been defined the arrangements, activities and input that people undertake in a certain land cover type. Land is normally defined as a physical entity in term of its topography and spatial nature (Ahmad, 2011), the term land use has implied for varied surface and dynamic uses of the land, and soil surveys e.g., land under cultivation, pasture, barren, fallow, waste, settlement, forest, water bodies etc., on varied terrain conditions and soil types. The structure of land use in any region is continuous process of evolution through interplay of ecological, technological and institutional influences. The proper utilization land is the economic backbone of the region and the use of the land is determined by the geographical condition, socio-economic structure, and availability of natural resources and determines the socio-economic condition and land use pattern of the region. Land utilization deals with the study of problems arising in the progress of deciding between the alternative major types of land use and putting all the types of land to their

respective optimum use (Martin *et al.* 2010).Land utilization is of great importance particularly when it can be put to alternative uses. Land is needed not only for agriculture but also for the forest produce, medicinal herbs and water, which play a vital role in the state economy (Shah 2010).

Literature cited

The geographers related to land use / land cover inventories have done many works. Some of the important contributions are by; Chatterjee, (1952) did land utilization survey of Howerth district West Bengal. Shafi, (1969) present a plan for land utilization and classified the land groups and their capability. Pandey , R.K(2000) discussed the land use and cropping pattern of Eastern Uttar Pradesh. S.P, Singh et. (2010) analyzed the land use pattern, cropping pattern, intensity and coverage under vegetable crops in different farm size groups in Eastern Uttar Pradesh. Barakade, A.J, (2011) analyzed the agriculture land use pattern at micro level in satara district (Maharashtra). Narayana, (2011) presented a geographical analysis by remote sensing of Sonbhadra district, U.P. Dhirendra, K. Pandey &V.N. Sharma, (2012) analyzed land use pattern in Saryupar Plain (Uttar Pradesh).

Objectives

The main purpose of the study is following:

- To analyze the existing land use pattern comparing the data of 2001-02 to 2011-12.

Methodology

The present study is empirical in nature. District is taken as unit of study. The study is based on secondary sources of data. Data is obtained from directorate of economic statistic Haryana. For deriving the results, simple statistical method is used and cartographic techniques are applied. Percentage of different land use dynamics and changing consternation categories have calculated to the geographical area of the districts. GIS technique has been applied for map making .

Study area

The Present study covered Haryana state. Haryana is a landlocked state in northern India. It's lies between 27˚37' north to 30˚53' northern latitude and 74˚28'east to 77˚36' eastern longitude. Haryana has carved out from Punjab in 1966 as a new state of India. On the northern side of it Punjab and Himachal Pradesh, Uttar Pradesh and Rajasthan are on east and south of Haryana and Punjab and Rajasthan share the western boundary. The Total area is 44212sq.km having 21 districts in 2011.

Map 1: Haryana Location map

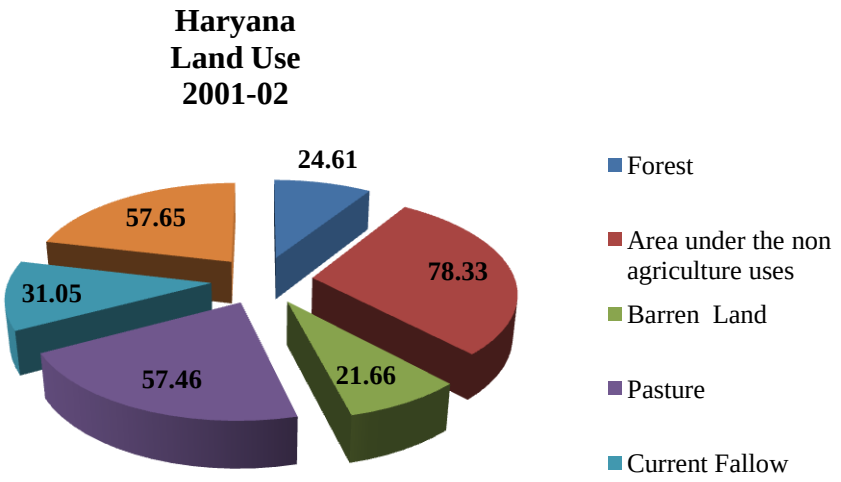


Fig. No.1

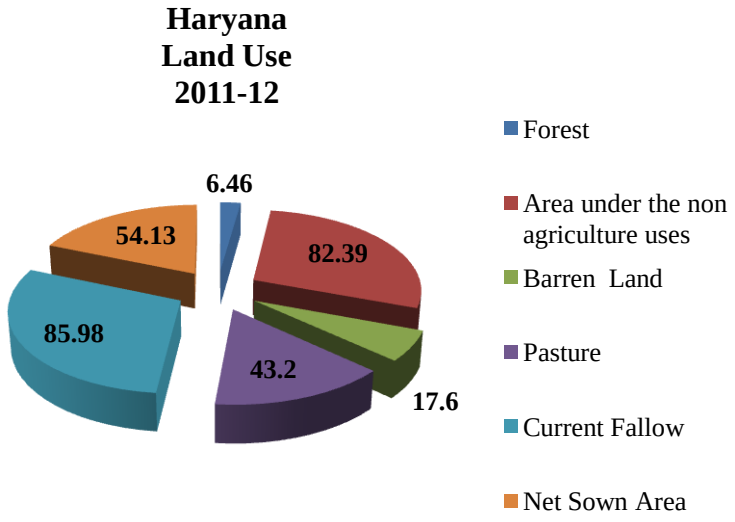


Fig. No.2

Forest:

Forest is the most attracting feature of the land. This category include all land classed as forest under any legal enactment dealing with forest or administered as forest, weather state-owned or private, and whether wooded or maintained as potential forest land. The area of crops in forest and grazing land or areas open for grazing with the forest are remain included under the forest area. Forest play an important role in the economy of region that shows relatively a large portion of population engaged in the forest based activities. The study area recorded (24.61% of the total area) forest in 2001-02 but it decreased to (6.46% of the total area) in 2011-12(Fig.no.1&2). Highest percentage of forest area in 2001-02 was found in Panchkula (334.92%) followed by Jind (114.92%), Yamunanagar (39.02%), Rohtak (33.77%), Sonipat (33.42%), Karnal (23.66%) and Bhiwani (22.70) districts. The lowest area under forest are registered in Mewat (7.74%) Mahendergrah (7.56%), Fatehabad (6.33%) and Gurgoan (5.56) districts. In 2011-12, highest area under forest has reported Palwal (48.09)

followed by Panipat (16.40), Rohtak (13.55), and Gurgoan (10.31), Kaithal (10.76), Sirsa (10.21) districts. Rest districts of Haryana had very lass forest area (2011-12) (Fig.No.3).Forest are more concentrated in south belt of the region.

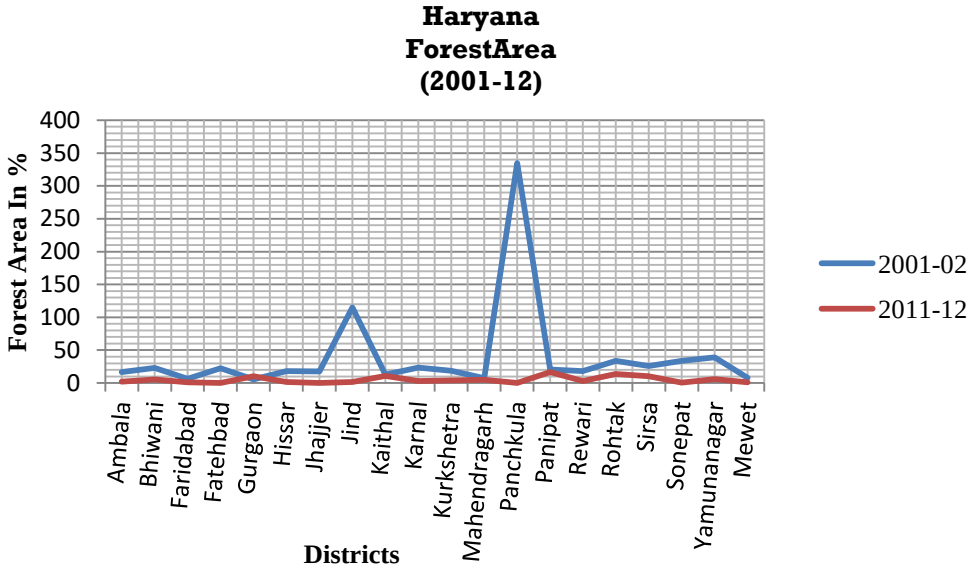


Fig. no.3

Area under the Non-Agriculture uses:

It includes the land put to non-agricultural use such as settlement, roads, railways, canal, dam and water bodies etc. Because of development activities like construction of link road, established of the new settlement. (Fig.no.1&2) show that in the study area the volume of land use cover under non-agriculture land was (78.33%) in 2001.02 and increased to (82.39%) in 2011-12. Significant positive change is observed due to diversion of land to residential, industrial and other constructional use. In 2001-02, highest land under in this category was founded in Sirsa (98.61%) followed by Jhajjar (97.09) and Panipat (96.09%), Kurukshetra (91.44%) districts. The lowest area has reported in Bhiwani (48.64%), Ambala (51.16%) and Panchkula (60.01) districts. On other hand, in 2011-12, Highest area under non- agricultural uses has found in Gurgoan (99.83) followed by Ymunanager (99.07%), Faridabad (95.36) and Rohtak (95.36%) districts (Fig.No.4). Remaining districts have reported lowest area under this category.

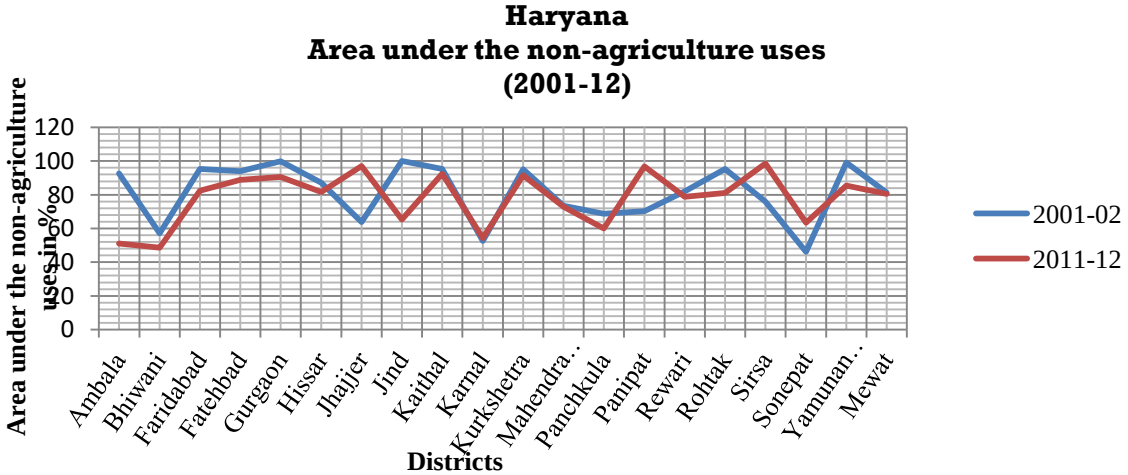


Fig.No.4

Barren non-cultivated land:

In this, category all barren and uncultivable land likes, mountains, deserts, etc. Land, which cannot be brought under cultivation except at an exorbitant cost, is classified as uncultivable. The study area recorded (21.66% of the total area) forest area in 2001-02 but it decreased to (17.60% of the total area) in 2011-12(Fig.no.1&2). Highest area are observed in 2001-02, in Bhiwani (51.35%) followed by Ambala (48.83), Karnal (45.60%), Panchkula (39.98%) and Sonipat (36.53%), Jind (34.72%) districts. The lowest area has recorded in Sirsa (1.38%), Jhajjar (2.90%) and Mewat (4.44%) districts. However, in 2011-12, highest area in this category has founded in Sonipat (53.83%) followed by Karnal (47.47%), Bhiwani (42.86%) and Jhajjar (36.16) districts. The lowest area is registered in Jind, Gurgoan (0.16%), Yamunanager (0.92%), and Faridabad (4.63%) districts (Fig.No.5).

Pasture:

The lands used for grazing are categorized as pastures. Common lands used for grazing in villages are included under this type of land. It covered 57.46%of total reported area in 2001-02. In 2011-12, pastureland was covered 43.20% of total area (Fig.no.1&2). It was due to utilization of pasture areas for construction of linked road of the villages and urban areas construction new settlements in urban areas etc. During 2001-02, a highest land uses in this category was observed in Karnal, Kaithal, and Faridabad districts. Where remaining districts has reported lowest area this category. In 2011-12, highest area has recorded in Panchkula followed by Panipat and Palwal districts. Rest districts of the state are registered lowest area in this category.

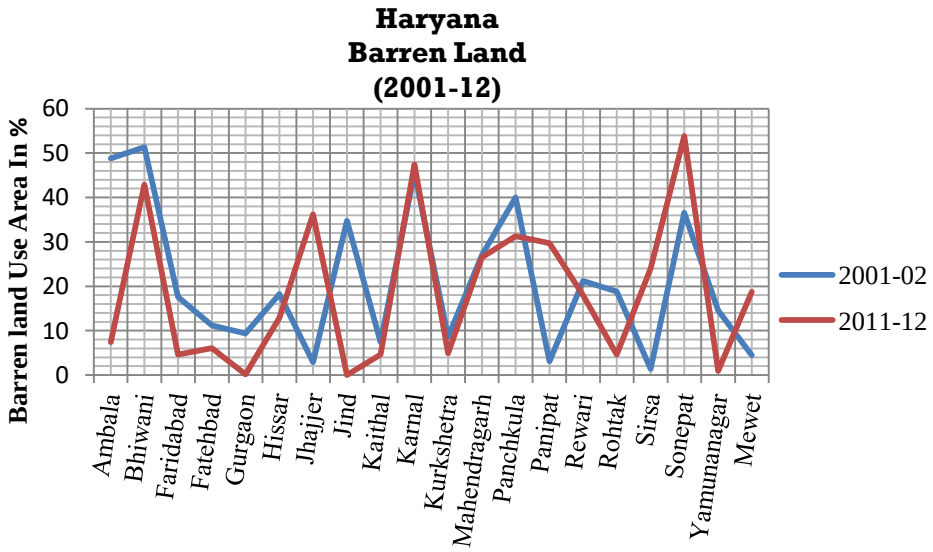


Fig.No.5

Net sown area

This represents the total area sown with crops and orchards. Area sowed more than once in the same year is counted only once. (Fig.no.1&2) show that in the study area the volume of land use cover under non-agriculture land was (57.65%) in 2001.02 and decreased to 54.13 percent in 2011-12. There are very high variations at district level, such as highest portion of this category was found (2001-02) Rohtak(65.66%) in followed by Yamunanager (65.22%), Rewari (65.18) and Jhajjar (63.63) districts. The lowest net sown area has found Panipat (47.09%), Karnal (49.89%) and Jind (53.98%) districts. During 2011-12, highest net sown area is registered in Gurgoan(72.66%), Panchkula

(68.19%), Sirsa (64.48%) and Sonipat (61.01%) districts. The lowest net sown area (2011-12) is reported in Faridabad (48.87%), Jind (49.76%), and Bhiwani (49.97%) districts (Fig.No.6).

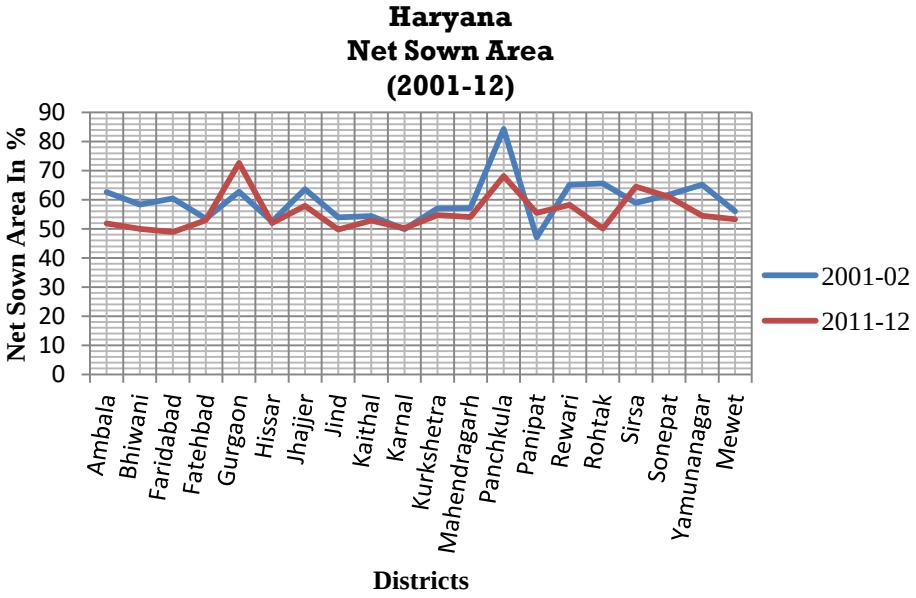


Fig.No.6

Changes in land use pattern:

Table No .1& Fig. No7 shows that changing the land use pattern from 2001-02 to 2011-12 of State under positive and negative changes.

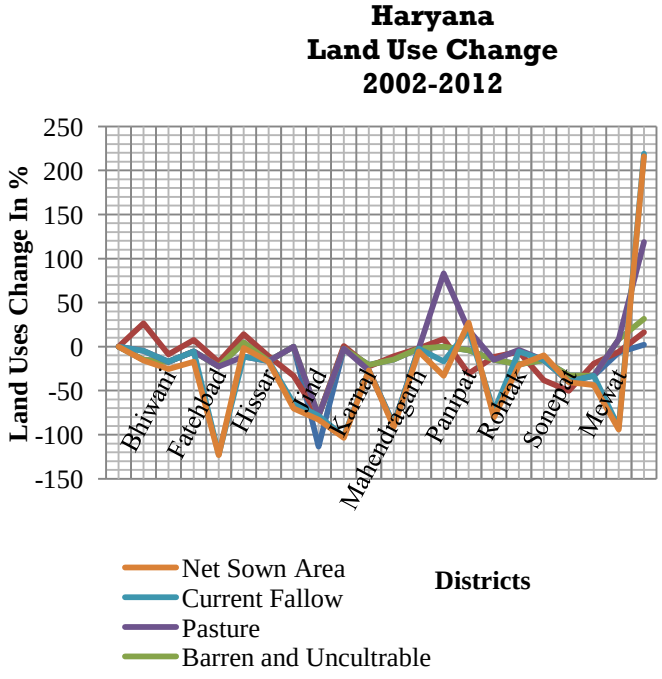


Fig. No.7

Table no.1 Changing the land use pattern (in %) from 2001-02 to 2011-12 of state

District	Forest	Area under the non agriculture uses	Barren Land	Pasture	Current Fallow	Net sown area
Ambala	-14.9	41.42	-41.42	9.99	0	-10.74
Bhiwani	-17.15	8.49	-8.49	-	0	-8.35
Faridabad	-5.5	12.96	-12.96	-	0	-11.55
Fatehbad	-22.59	5.09	-5.09	-	-100	-0.51
Gurgaon	4.75	9.23	-9.23	-16.21	0	9.87
Hissar	-16.46	5.366	-5.36	-	0	-0.57
Jhajjer	-	-33.26	33.26	-	-64.56	-5.67
Jind	-113.3	34.73	-	-	0	-4.22
Kaithal	-2.14	2.86	-2.86	0	-100	-1.5
Karnal	-20.63	-1.87	1.87	-6.47	0	0.29
Kurkshetra	-14.69	3.63	-3.63	-74.18	0	-2.22
Mahendragarh	-2.4	0.56	-0.56	-	0	-3.13
Panchkula	-	8.7	-8.7	83.15	-100	-16.16
Panipat	-3.9	-26.6	26.598	22.59	0	8.46
Rewari	-15.01	3.26	-3.26	-	-58.59	-6.89
Rohtak	-20.22	14.21	-14.21	16.62	-2.07	-15.57
Sirsa	-15.49	-22.64	22.64	-	0	5.6
Sonepat	-32.93	-17.3	17.3	-6.66	0	-0.76
Yamunanagar	-32.99	13.64	-13.64	-	0	-10.75
Mewat	-6.61	0.77	14.28	-	-100	-2.75
Palwal	2.54	0.82	15.35	87.26	-100	-1.54
Haryana	-18.15	4.06	-4.06	-14.26	54.93	-3.52

- Source : Directorate of Economic Statistic of Haryana 2001-02, 2011-12
- Calculation by Author with Help of Excel

Changing area of forestland use

In forestland use, changing constriction in state was negative which account for -18.15 percent. Out of 21 districts, only one district of the state Gurgoan was found positive change 4.75%. Rest districts of state are registered negative change.

Changing area of non-agriculture land:

From 2001-02 to 2011-12, an increase in the percentage of changing concentration of non-agriculture land in the state was 4.06 percentage. Due to bringing the extra land use the residential, industrial development, transport network etc. increase in the concentration of non-agricultural land use recorded in 16 districts. The highest increase is registered in Ambala with 41.42 percentage, Jind 34.73 percentage, and Rohtak (14.21%), Faridabad (12.96%) districts. The negative change observed in Jhajjar (-33.26%), Panipat (-26.6%) and Sirsa (-22.64%).

Changing area of barren land use

From 2001-02 onwards trends of changing concentration of barren land in the state have been shown negative -14.26 percentages. Changing analysis revealed that changing contraction in cultivable wasteland use. This negative trend was possible due to efforts of the state government, which schemes for improvement of forest area and increase non- cultivable land to residential, industrial purpose. Significant positive change is observed in 7 districts with highest percentage in Jhajjar 33.26 percentage, Sirsa 22.64 percentage and Mewat 14.58 percentage. Remaining distracts of state observed negative change.

Changing area of current fellow land

Significant negative change is observed in current fellow land cover of state. It is because of efforts taken by the state government to improve net sown area and for development activities such as creation of SEZ, allocation of land for residential construction. All districts of the state are registered negative change.

Changing area of net sown area

From 2001-02 onwards the trend of concentration in net sown area land in the state has been negative -3.52 percentage. Out of 21 districts of the state, only five districts is observed positive change and remaining districts are negatively change. It is because of increasing non- cultivable land to residential, industrial purpose and transport network etc.

Conclusion

In the present investigation after analyzing the dynamic land use pattern of state for the study period 2001-02 to 2011-12, it is observed that the land use dynamics in state is increasing population, commercialization of agriculture etc., have put major issue of land use change in Haryana at districts level. The land under forest, barren land, current fellow land, and net sown area are decreased during 10 years form 2002to12. However, during 2002 to 12, an increase in the percentage of changing concentration of non-agriculture land in the state was 4.06 percentages. Due to bringing the extra land use the residential, industrial development, transport network etc. In forestland use, changing constriction in state was negative which account for -18.15 percent. Mostly districts of the state are registered less forest area during the study period. It is because of deforestation for agriculture land, sprawl of urban areas development activities, demand of wood for fuel, food etc. Significant negative change is observed in current fellow land cover of state. All districts of the state are registered negative change. It is because of efforts taken by the state government to improve net sown area, irrigation facilities, and crop rotation. From 2001-02 onwards the trend of concentration in net sown area land in the state has been negative -3.52 percentages. Mostly districts of state are observed negatively change under sown area. It is because of increasing non- cultivable land to residential, industrial purpose and transport network etc.

References:

1. *Barkade A.J., et (2011) "Agriculture Land use Pattern in Satara District of Maharashtra,* ***Research Analysis and Evolution****, Vol-I, Issue17.*

2. *Chatterjee, S.P., (1952)" Land Utilization survey of Howart District,* ***Geographical Review of India,*** *Vol.14,pp.30-39.*

3. *Dhiirendra K, Pandey And V.N. Sharma,(2012) " Land Use Pattern in Saryupar Plain, Uttar Pradesh : A Geographical Analysis,* ***National Geographical Journal of India,*** *Vol.58,Pts.(4), Dec., 2012:53-64.*

4. *Dr. Bhagawat Rimal (2012), "Spatio-Temporal Dynamics of Land Use Pattern Response to urbanization in Biratnagar Sub-Metropolitan City, Nepal",* ***IRACST,*** *Vol.2, No.1, 2012.*

5. *Dhian Kaur (1991), "Changing Patterns of Agricultural Land use",* ***Rawat Publications****, Jaipur, Pp- 50.*

6. *Mandal, R.B. (1982): "Land utilization - Theory and Practice"* ***Concept publishing company,*** *New Delhi, p. 128.*

7. *Singh, K.N. (1970), "Land use, Cropping Pattern and their Ranking in Shahganj Tahsil: A Geographical Analysis",* ***National Geographical Journal of India,*** *Vol. XVI, Part III-IV,*

8. *Singh Jasbir and Dhillon S.S. (2000): "Agricultural Geography (Second Edition)"* ***Tata McGraw Hill publishing company limited****, New Delhi, p.375.*

Table no.1 land use pattern (in %) 2001-02 of state

District	Forest	Area under the non agriculture uses	Barren Land	Pasture	Current Fallow	Net sown area
Ambala	16.83	51.16	48.83	64.67	100	62.67
Bhiwani	22.70	48.64	51.35	-	100	58.32
Faridabad	6.33	82.40	17.59	100	100	60.42
Fatehbad	22.63	88.83	11.16	-	100	53.54
Gurgaon	5.56	90.60	9.39	100	100	62.79
Hissar	17.96	81.72	18.27	-	100	52.59
Jhajjer	17.62	97.09	2.90	-	96.30	63.63
Jind	114.92	65.27	34.72	-	100	53.98
Kaithal	12.90	92.54	7.45	100	100	54.38
Karnal	23.66	54.39	45.60	86.80	100	49.89
Kurkshetra	18.62	91.44	8.55	83.27	100	56.99
Mahendragarh	7.56	72.93	27.06	100	100	57.15
Panchkula	334.92	60.01	39.98	16.85	100	84.35
Panipat	20.30	96.90	3.092	77.41	100	47.09
Rewari	18.21	78.78	21.21	-	100	65.18
Rohtak	33.77	81.15	18.84	63.57	100	65.66
Sirsa	25.70	98.61	1.38	-	100	58.88
Sonepat	33.42	63.46	36.53	28.42	100	61.77
Yamunanagar	39.02	85.43	14.56	87.34	100	65.22
Mewet	7.74	80.50	4.44	-	100	56.08
Haryana	24.61	78.33	21.66	57.46	31.05	57.65

- Source: CalculatioSource: calculation is based on Secondary Data Obtain from Directorate of Economic Statistic of Haryana (2001-02).
- Calculation by Author with Help of Excel

Table no.2 Land use pattern (IN %) 2011-12 of state

District	Forest	Area under the non agriculture uses	Barren Land	Pasture	Current Fallow	Net sown area
Ambala	1.93	92.58	7.41	74.66	100	51.93
Bhiwani	5.55	57.13	42.86	-	100	49.97
Faridabad	0.83	95.36	4.63	-	100	48.87
Fatehbad	0.04	93.92	6.07	-		53.03
Gurgaon	10.31	99.83	0.16	83.79	100	72.66
Hissar	1.50	87.086	12.91	-	100	52.02
Jhajjer	-	63.83	36.16	-	31.74	57.96
Jind	1.62	100	-	-	100	49.76
Kaithal	10.76	95.40	4.59	100		52.88
Karnal	3.03	52.52	47.47	80.33	100	50.18
Kurkshetra	3.93	95.07	4.92	9.09	100	54.77
Mahendragarh	5.16	73.49	26.50	-	100	54.02
Panchkula	-	68.71	31.28	100		68.19
Panipat	16.40	70.30	29.69	100	100	55.55
Rewari	3.20	82.04	17.95	-	41.41	58.29
Rohtak	13.55	95.36	4.63	80.19	97.93	50.09
Sirsa	10.21	75.97	24.02	20.21	100	64.48
Sonepat	0.49	46.16	53.83	21.76	100	61.01
Yamunanagar	6.03	99.07	0.92	-	100	54.47
Mewat	1.13	81.27	18.72	62.49		53.33
Palwal	48.09	84.64	15.35	87.26	100	58.74
Haryana	6.46	82.39	17.60	43.20	85.98	54.13

- Source: Calculation is based on Secondary Data Obtain from Directorate of Economic Statistic of Haryana (2011-12).

- Calculation by Author with Help of Excel.