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LANDUSE AND AGRICULTURE IN KARNAL DISTRICT

Dr. Daljit kaur

Associate professor, Guru Nanak Khalsa college, Yamuna Nagar, Haryana, India

Abstract

Land use is the total arrangement and the activity that human beings undertaken on earth surface. According to the changing needs of the society, time to time, the land use also changed. Since the evolution of societies, the basic needs of food, shelter and clothing of mankind have been fulfilled from the land and agriculture. This is block wise study of Karnal district based on secondary data. In this paperthe use of land under different categories has been studied. The patterns of agricultural development studied in terms of land use, cropping patterns, cropping intensity and crop combination of Karnal district.

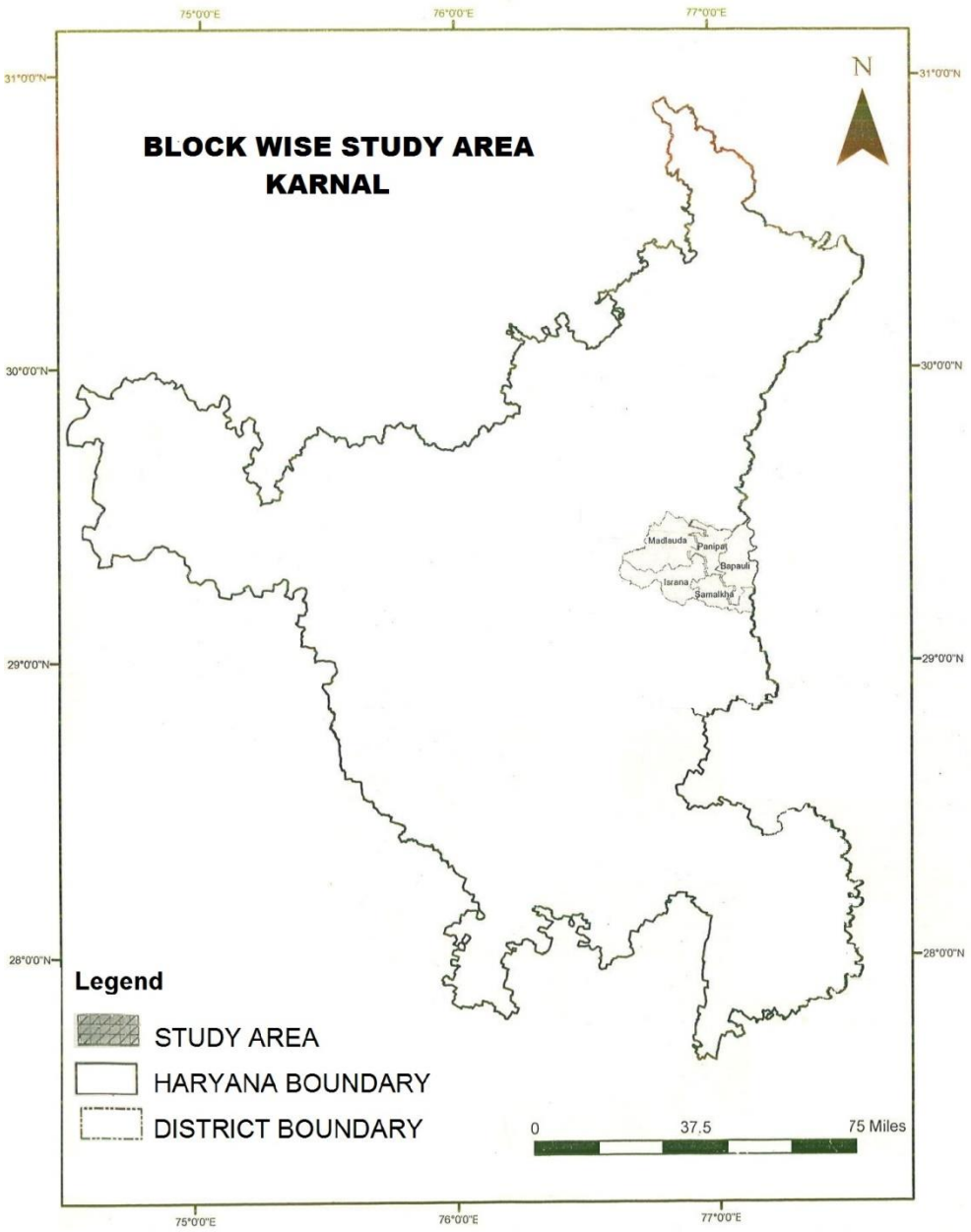
Keywords: land use, cropping patterns, cropping intensity and crop combination.

Introduction

The Karnal city is located at 29.690 north latitudes and 76.980 east longitudes with an area of 2463.38 q km. The district included six blocks i.e. Karnal, Indri, Nilokheri, Nissing, Assandh, Gharaunda. It is said that the city karnal founded by karna, a main character of epic Mahabharata. It is also known by Rice Bowl of India and located in National Capital Region.Today it has been ranked first in Haryana (65th in India) among 434 cities in the list of cleanest cities of India Swachhsurvekshan.

The word land use is used to describe the uses of an area. The total geographical area of the study region is used in different manners. The utilization of land depends upon physical factors like physiographic, soil, climate and water resources. At the same time human factors such as density of population, duration of occupation of the area, land tenure and technical level also play a significant role. But temporal differences in land utilization due to continued interplay of both physical and human factors can never be under estimated. In agriculture land use may include the total cultivated area (net sown area + fallow land), forest cover, barren land and land put to non-agricultural uses. "Between 1700-2000 AD total cultivated area of India has grown from 30million hectares to 150 million hectares, an increase of 120-million hectares to total geographical area,

which is almost 328.8 million hectares. This considerable change was driven by new irrigation projects which converted semi-arid lands to grain cultivation" (Sundervel, 2001). "The dependency on environmental resources like land and water in agriculturally developed regions of Punjab and Haryana states are increasing rapidly to achieve the food security in India" (.Singh, R.B. 2001). Green revolution has offered us self-sufficient in food and enabled us to pursue modernization with the measure of confidence.



Ojectives

The present study has been carried out with the specific objectives i.e. to study the land use pattern andthe patterns of agricultural development in terms of cropping patterns, cropping intensity and crop combination inKarnal district.

Methodology

The present study is exclusively based on secondary data collected from Staistical abstract and Directorate of Agriculture, Haryana.The various patterns of crop combination of the study region have been characterized by applying the Doi's method. The collected data has been processed with statistical techniques and analyzed then the results are presented in maps.

Land use

According to table 1 Haryana state during 2010-11 out of 4371 thousands hectares of total geographical area, net sown area has a share of 3513 thousands hectares (80.37 per cent),whereas, study area has 246 thousands hectares of total geographical area, out of which net sown area has a share of 191 thousands hectares (78.04 per cent)

TABLE :-1 Land Use OF STUDY AREA (000 hec.) 2010-11

	Geographical Area	Land not available for cultivation	Other uncultivated land excluding fallow land	Forest	Fallow land	Net sown area	Area sown more than once	Total cropped area
Study area (2010-11)	246	29 (11.78)	11(4.47)	1(0.4)	13(5.28)	192(78.04)	191	383
Haryana (2010-11	4371	606(13.86)	64 (1.46)	39 (0.89)	149 (3.4)	3513 (80.37)	2976	6489

*(Percentages are given in bracket)

Source :- Statistical Abstract, Haryana, 2010-11

The net area sown of the study area has reached its optimum (191 thousand hec.). There is no chance for further development in this category of land because an area under non-agricultural uses has been increasing rapidly in the recent years and cultivable waste land has either non-existent or have scanty share 11 thousand hectares (4.42 percent). And for construction of building, roads and other urban development especially Karnal is growing rapidly as smart city galloping cultivated area for their expansions.

Block wise Land use Classification:

Land Not Available For Cultivation

It consists of three types of land namely, land put to non-agricultural uses, barren and cultivable wasteland. The area put to non-agricultural uses contain built up area by blocks, roads, railways and water bodies like rivers, ponds, lakes, canals, tanks etc. Table 2 reveals that Indrihas maximum land (19.03 percent) under this category and minimum in Assandh (6.60 percent).

Other Uncultivated Land Excluding Fallow Land

This category includes two types of land viz; permanent pastures and other grazing land and land under miscellaneous tree crops and grooves. Nilokheri has mimimum (0.26 percent) and Assandh has maximum (2.00 percent) area under other uncultivated land excluding fallow land (table 2).

Forest

In the study area forest area has decreased day by day. The share of land under forest is almost absent in all blocks (table 2).

Fallow land

This category includes the land, which is used for cultivation but for the time being is not cultivated. A piece of agricultural land is left out from agriculture operations for various reasons like to regain the soil fertility. Fallow land is of two types viz; Current fallow and fallow other than current fallow. Fallow of one year is called 'current fallow' while fallow of 2 to 5 years is termed as 'fallow other than current fallow'. This is an important category of land use because this helps the soil to regain its fertility in natural way depending upon the nature of soil and nature of farming. But it has been observed while study that the share of fallow land is minor. Cultivator did not kept their farm fallow and grow Zaid crops between the rabi and kharif crops. Even they did not left their farm for one or two months. Maximum fallow land is found in karnal block(4.42 percent) in study period and minimum in Indri i.e. (0.26 percent).

Net Sown Area

Net sown area has a special place in an agricultural economy because agricultural production mainly depends upon this type of land. More and more land is being brought under cultivation to meet ever-increasing demand of the food products. Assandh has the maximum (88.82 percent) net area sown and Indri has minimum (76.86 percent). Maximum total cropped area is also observed in Assand block (table 2).

TABLE 2 LAND USE 2010-11 (AREA IN HECTARES)

Blocks	Geographical area	Land not available for cultivation	Other uncultivated land excluding fallow land	Forest	Fallow land	Net sown area	Area sown more than once	Total cropped area
Indri	37413	7281 (19.46)	1203 (3.21)	75 (0.20)	98 (0.26)	28756 (76.86)	23646	52304
Nissing	40569	3561 (8.77)	496 (1.22)	41 (0.1)	1113 (2.74)	35358 (87.16)	34815	70173
Karnal	40277	5451 (13.53)	573 (1.42)	124 (0.31)	1783 (4.42)	32346 (80.31)	30570	62916
Nilokheri	40264	4625 (11.48)	105 (0.26)	92 (0.23)	1590 (3.95)	33852 (84.07)	33183	67035
Assandh	49711	3281 (6.60)	995 (2.00)	56 (0.11)	1228 (2.47)	44151 (88.82)	35160	79311
Gharaunda	40725	6937 (17.03)	175 (0.43)	140 (0.34)	1201 (2.95)	32272 (79.24)	23588	55860

Source: Director of Agriculture, Haryana.

(Percent are given in bracket)

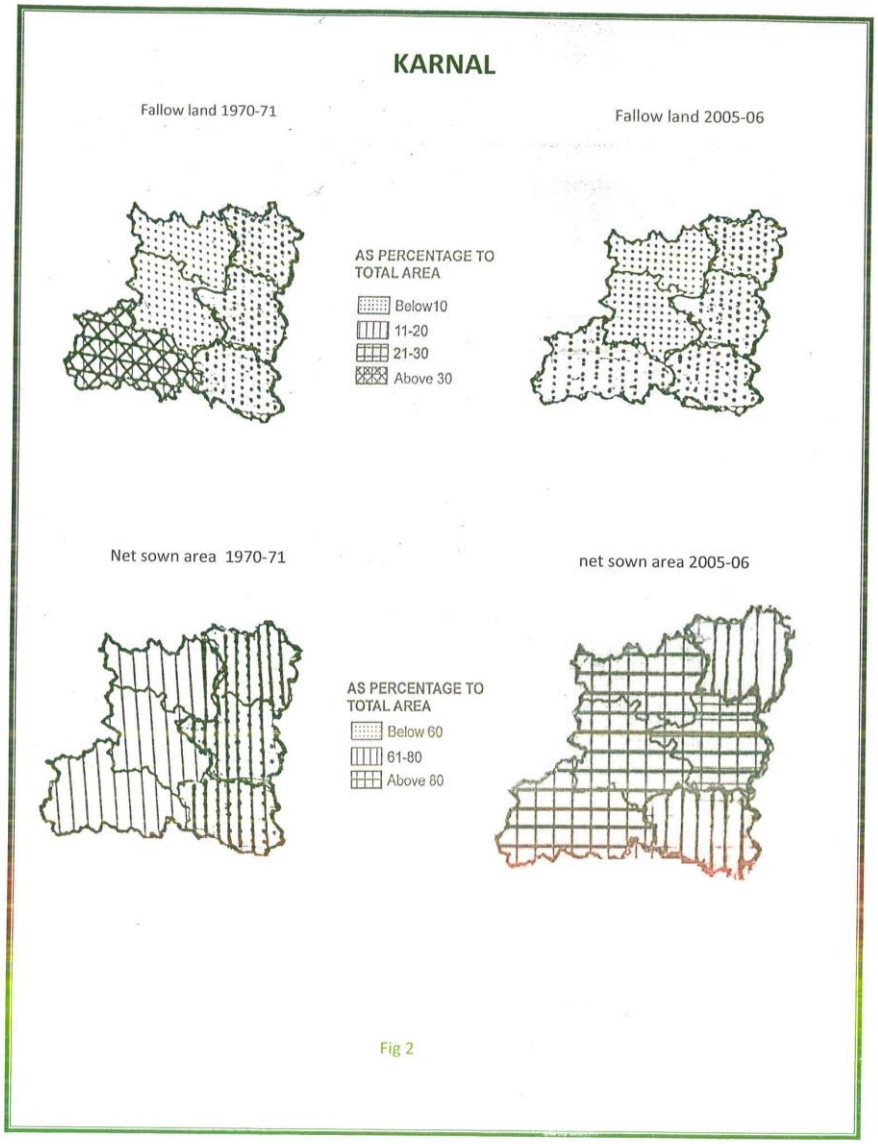


Fig 2

Sources of irrigation

Irrigation is available from various sources. water is an essential life supporting natural resource and plays a dominant role in agricultural production.

In 2010-11, as reveal from the table 3, only in Assandh block maximum (7.67 per cent) cultivable land was irrigated by the other sources of irrigation like ponds, rahat, wells etc. and followed by Karnal (2.51 percent). Maximum canal irrigation was used by Assandh and Nilokheri blocks i.e. 28.68 and 28.57 percent respectively. About 85.80 percent cultivated area of Indri block adopted tubewell irrigation . Maximum total irrigated area is also observed in Indri block. As table reveals that 19741.29 hectares agricultural land is irrigated.

TABLE 3 BLOCK- WISE SOURCES OF IRRIGATION IN

2010-11 (AREA IN HECTARES)

Blocks	Tube well	Canal	Other source	Total	Net area cultivated
Indri	16938.46 (85.80)	2695.95(13.65)	106.88 (0.54)	19741.29	28756
Nissing	7577.73 (82.05)	1585.83 (17.17)	71.66 (0.77)	9235.22	35358
Karnal	12370.45 (75.75)	3550.20 (21.73)	410.12 (2.51)	16330.77	32346
Nilokheri	10407.29 (71.25)	4172.87 (28.57)	25.10 (0.17)	14605.26	34352
Assandh	6686.24 (63.64)	3013.36 (28.68)	805.67 (7.67)	10505.26	44151
Gharaunda	9338.87 (74.84)	3066.40 (24.57)	73.68 (0.59)	12478.95	34272

Source: Director of Agriculture, Haryana.

Cropping Pattern

Cropping pattern means the most efficient use of land and other resources of the cultivator. It should provide alternate plans for the farmer to maximize his production per unit area, per unit time. The market forces and economies of crops at any point of time will determine the most profitable cropping pattern. As a concept, however, the efficient cropping pattern must ensure greatest efficiency of land, fertilizers, irrigation water and other inputs.

Cropping pattern means the proportion of an area under different crops at a point of time. Cropping structure refers to the relative strength of crops in the crop association in an area. The variation in cropping structure and cropping pattern is analyzed in the contract of development of water resources.

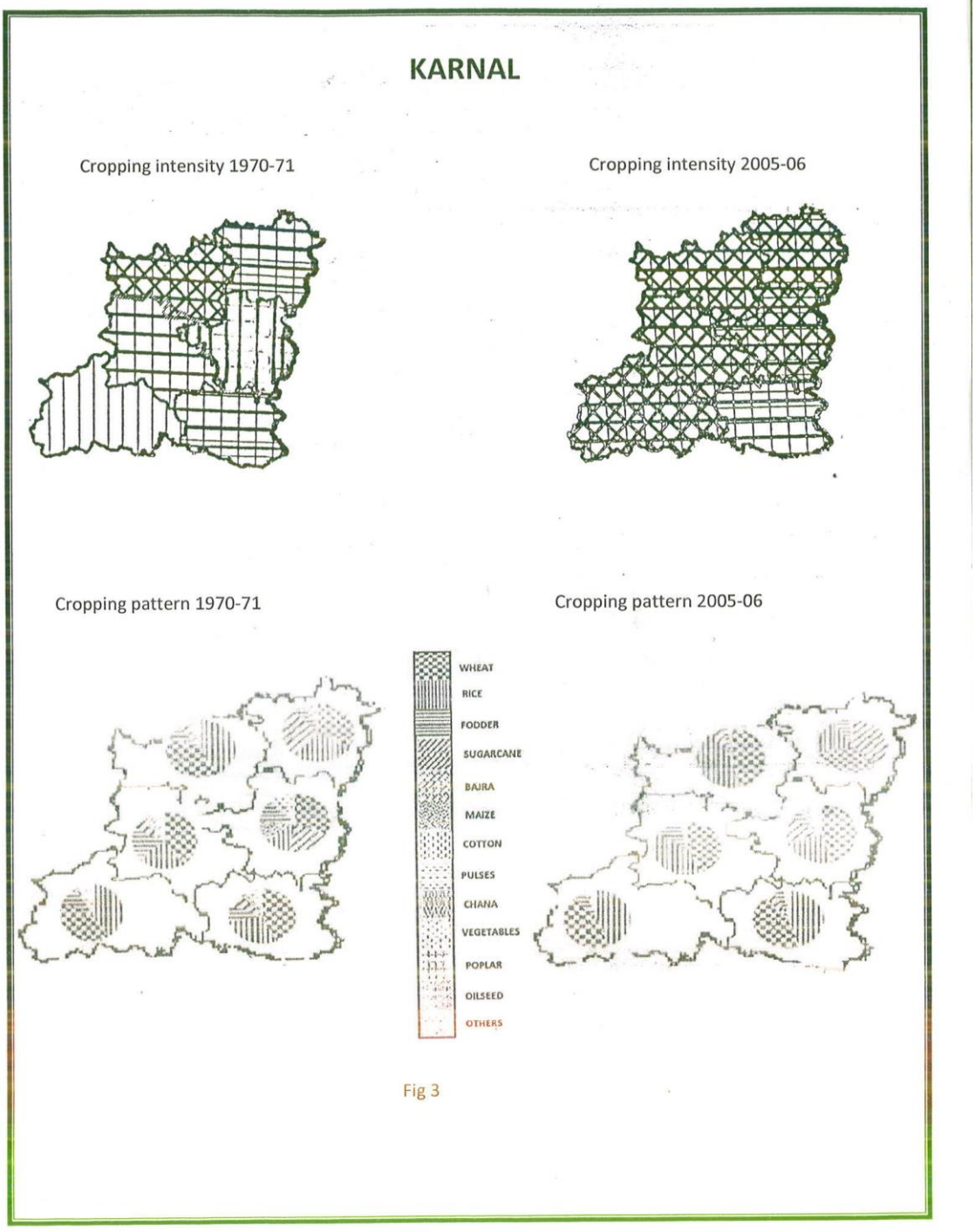


Fig 3

Cropping pattern of Karnal district is wheat, rice, sugarcane and fodder are prominent crops along with minor crops like vegetables, potatoes, barley, orchards, garlic, bajra, dhancha, jai, trees etc. In Karnal block wheat, rice, sugarcane and fodder are prominent crops with 88 per cent share of total cropped area. In indri block Sugarcane, wheat, rice and fodder are leading crops with more than 98 per cent share of arable land. In Nissing block wheat, rice and fodder are prominent crops. The share of these crops is more than 96 per cent of total cropped area. In Nilokheri block wheat, rice and sugarcane are the prominent crops with more than 95 per cent of arable land. In Assandh block rice, wheat,

fodder and sugarcane are the prominent crops with 96 per cent of total cropped area. In Gharaunda block rice, wheat, sugarcane and fodder are main crops with more than 98 per cent share of arable land.

Intensity of cropping

Irrigation is directly responsible for the adjustment of cropping intensity and cropping pattern of the study region.

The intensity of cropping refers to the number of crops grown on the agricultural field during an agricultural year.

TABLE 4: INTENSITY OF CROPPING (2010-11)

Blocks	Intensity of Cropping
Indri	181.88
Nissing	198.46
Karnal	194.51
Nilokheri	197.76
Assandh	179.63
Gharaunda	168.82

The term multiple cropping is defined as a sequence of different crops grown on the same land during a period of time usually 12 months' period. It differs from double or triple cropping in that the latter is a monoculture being repeated growing of the same crop also during the 12 months' period. Both type of cropping pattern lead intensive cultivation and are conducive to higher productivity.

All the blocks of the study area has high and very high intensity of cropping.As table 4 shows that the intensity of cropping of the study region is vary from 198.46 percent in Nissingto 168.82 percent in Gharaunda.

Crop Combination:

Crop combination is a procedure to vary the boundaries of agriculture region based on the statistical comparison of hectares of different crops. The various patterns of crop combination of the study region have been characterized by applying the Doi's method. Doi's technique of least deviation of actual percent from the standard theoretical combination values is of little help of the identification of crop combination in blocks. The study area, though, has favorable agricultural potentials; spatial variations in the quantity of groundwater resources do not allow a more uniform cropping pattern and consequently a crop combination. Therefore, in study region the following crop combinations have been observed.

Crop combination

Category of two - crop in combination: There are two combinations of this category in the study region. These are in form of rice-wheat and wheat-rice. Rice-wheat crop combination is found in, Assandh and Gharaund blocks. Wheat-rice crop combination is mainly common in Nissing and Nilokheri blocks.

Category of Three-crop in combination: There is one combinations of this category in the study region i.e Wheat-rice-sugarcane combinations is found in Karnal block.

Conclusion

More and more land is being brought under cultivation to meet ever-increasing demand of the food products. Whole study area has maximum net area sown with less fallow and other use of land. Assandh has the maximum (88.82 percent) net area sown Due to the use of HYV seeds, insecticides, pesticides, irrigation facilities and modern methods of agriculture the cropping intensity is more than 160 percent in the study area. Emphasis has given to fine food grain and cash crops sugarcane and. But some minor crops like maize, pulses are grown by marginal farmers. But there share is negligible. These being coarse food grain require less amount of water. Whereas cash crop i.e. sugarcane and fine food grain like rice and wheat are water demanding crops. Only two type of crop combination is common. Wheat and rice major crops and minor crops like vegetables, potatoes, barley, orchards, garlic, bajra are grown in study area.

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