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LEVEL OF AGRICULTURAL DEVELOPMENT IN KANGRA DISTRICT, HIMACHAL PRADESH

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ABSTRACT

Agriculture accounts for the largest share of the world's economically active population and is the most important contributor to the national income in many developing countries, as it is the most widely distribute over the surface of earth than any other economic activity. No-one land unit can be, by nature, be like another and as such differ in agricultural persuits. The diversity in agriculture results chiefly from the physical attributes and socio-economic structure of a land unit and so these two factors put a stamp upon land use patterns in any areal unit. India is also an agricultural country, where 50% of national income comes from agriculture and gives driect employment to about 68% of its total population and nearly 90% population of rural area

KEYWORDS :Agricultural Development ,economically active , agricultural land .

INTRODUCTION :

The study of the agricultural land use patterns in Kangra district is quite relevant and significant, because it provides livelihood to bulk of the population of the study region. The study region cannot be categorized as agriculturally developed region due to hilly and rugged topography, poor soil cover, lack of irrigational facilities social backwardness and lack of modern technology. The north and northeastern portions of the study region are very hilly and rugged where it is quite difficult to raise the crops. Here, wheat and rice are the dominant as cereal crops, whereas some seasonal vegetables and fruits and dry fruits are also grown. The southern part of the study region, which includes the area adjoining the Beas River, leads in the cultivation of wheat and maize. The western portion of the study region is dominated by the cultivation of pulses besides wheat and maize. Therefore, it gives an idea

that how the agriculture is practiced in different areas of our study region. Such type of geographical study is quite essential because it helps the agricultural geographers, economists and planners to know the regional variation in agricultural landscape easily. In the right of the above statement, the present work has been formulated to analyze the concerning agricultural problems, faced by the area under study. It enables the planner to understand and the present scenario of agriculture, which helps for further planning of our study region for future prospects.

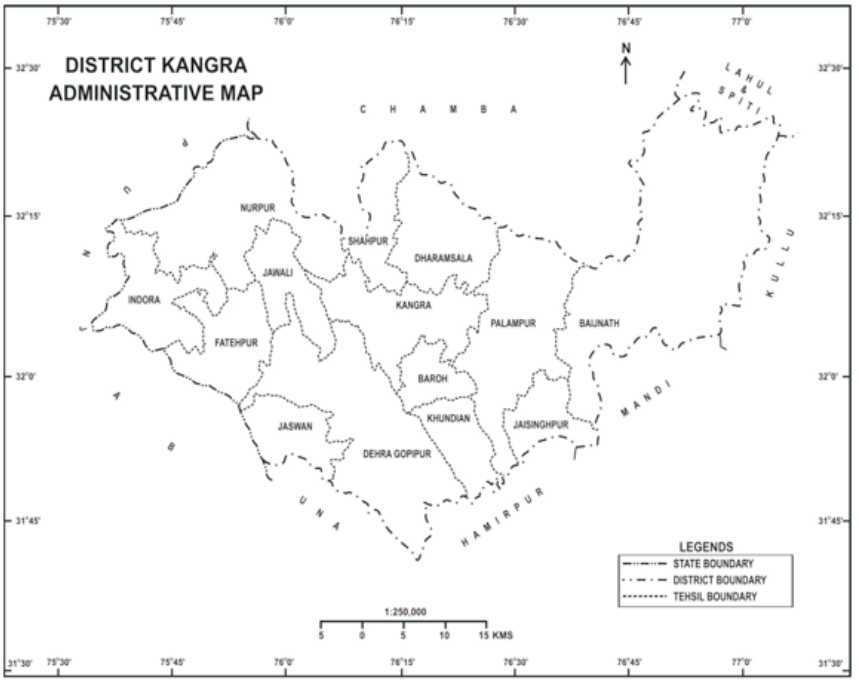
As a result of it, the present study deals to a relationship between some of these factors (total geographical area, gross cropped area, irrigated area etc) and land. For this purpose, the quantitative method of it of correlation has been applied. Eight effective have been carefully selected from the set of these that have an influence on the landuse of our study region.

STUDY AREA

The district Kangra is situated in the northwestern part of the state of Himachal Pradesh. It lies in the western Himalayas between $31^{0}2$ to $32^{0}5'$ N latitudes and 75^{0} to 77^{0} 45E longitudes. The district has a geographical area of 5,739 Km^{2}, which forms 10.31% of geographical area of the state. It is the fourth largest administrative unit (district) of the state after Lahul Spiti, Kinnaur and Chamba. Since the entire state is hilly, physiographical variations are accompanied by the climatic differences. The altitude varies from 427metres in the western part of the study region to above 6,400 meters in the northeast from mean sea level. Thus, southern portions of the study region are comparatively plain and touch the Una district of the state. Towards the north of the study region lie the areas of Kullu and Chamba district. In the east of Kangra district lies the areas of Mandi district of Himachal Pradesh and towards west, lies the Gurdaspur district of Punjab. On the basis of diversity in its soils, physiography, general land use and cropping system, the district has further been divided into five sub-divisions. These divisions are Dhauladhar, Kangra Shiwalik, Kangra Valley and Bias Basin. The agro-ecological situations, which are found in the district, Kangra varies from sub-tropical to wet/dry temperate. The rains are well distributed in the whole district, and more than 70% of the total annual rainfall is received during the monsoon period from July to September. The high mountain like Dhauladhar receives heavy snow in winters. Summers are hot in low hill valleys but mild in other hilly areas of the district Kangra. Nearly 90% of the total population of the study region directly or indirectly depends upon agriculture for their livelihood.

From administrative point of view, the district Kangra has been divided into eight sub-divisions viz., Dharamshala, Palampur, Baijnath, Kangra, Nurpur, Jawali, Dehra and Jaisinghpur and from developmental point of view, the district has fourteen development blocks, viz. Baijnath, Bhawarna, Lambagaon, Panchrukhi, Kangra, Nagrota Bagwan, Rait, Dehra, Pragpur, Nagrota Surian, Nurpur, Indora, Fatehpur and Bhedoo Madadeve. The district with respect to revenue control has been divided into fourteen tehsils and five sub-tehsils. These tehsils are Baijnath, Baroh, Dharamshala, Dehra, Fatehpur, Indora, Jaisinghpur, Jaswan, Kangra, Khudian, Jawali, Nurpur, Palampur and Shahpur (Map 1.1) and five sub tehsils are Dheera, Harchakiyan, Muithan, Thural and Rakkar. There are 708 Gram Panchayats, 3869 villages and eight towns viz' kangra, Nagrota Bagwan, Nurpur, Dharamsala, Palampur, Dehragopipur, Jawalamukhi and Yol. It would not be out of place to mention here that present study has taken only fourteen tehsils for analyzing the patterns of agricultural land use.

Map No.1.1



Data Sources and Methodology:- The data related to net sown area total geographical area, gross cropped area, irrigated main crops have been collected at tehsil level from the different secondary sources for the year of 2002-03. The data is relation to demography have been collected from the India for the year of 200l. The whole data, is then into percentages. The data has been collected for eight variables: -

X_1 = Percentages of net sown area to total geographical area.
X_2 = Percentages of irrigated area to gross cropped area.
X_3 = Percentages of area under wheat to net sown area.
X_4 = Percentages of area under maize to net sown area.
X_5 = Percentages of cultivators to total workers.
X_6 = Percentages of total workers to total population.
X_7 = Percentages of literates to total population.
X_8 = Percentages of total population to total geographical area.

The correlation coefficient has been calculated by adopting the quantitative techniques, namely correlation coefficient for 14x8 data matrix. Pearson product movement t correlation was applied. The table 1.1 reveals the detailed information of variable used in analysis

Table 1.1
CORRELATION MATRIX

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
X_1	1							
X_2	0.436	1						
X_3	0.967	0.285	1					
X_4	0.768	-0.1	0.880	1				
X_5	0.580	0.178	0.702	0.745	1			
X_6	0.740	0.536	0.779	0.671	0.882	1		
X_7	0.846	0.693	0.796	0.578	0.84	0.939	1	
X_8	0.843	0.685	0.806	0.582	0.678	0.927	0.999	1

Where,

X_1 = Percentages of net sown area to total geographical area.
X_2 = Percentages of irrigated area to gross cropped area.
X_3 = Percentages of area under wheat to net sown area.
X_4 = Percentages of area under maize to net sown area.
X_5 = Percentages of cultivators to total workers.
X_6 = Percentages of total workers to total population.
X_7 = Percentages of literates to total population.
X_8 = Percentages of total population to total geographical area

The above table reveals the result obtained. The relationship between these variable is summarized as under

RESULTS AND ANALYSIS

Net Sown Area: - Net sown area is the area cultivated for growing crops. This area is directly involved in feeding the human and livestock population. This important parameter has shown the positive correlation with the two crops, i.e with wheat and maize. However, it has shown the positive correlation with all other parameters, but the degree of correlation varies from one parameter to another. The net sown area has the weakest correlation with irrigated areas in the region, which goes to prove our earlier finding that total area irrigated in our study region is not substantial. Our study region falls in an area which receive rainfall both from monsoon (in summers) and from western disturbances (during winters). The maximum positive coefficient of correlation (0.967) of net sown area with wheat and very high positive coefficient of correlation with maize (0.768) goes to prove that though these two crops do demand irrigation are yet not totally depend on it. Summer and winter rains prove sufficient for the cultivation of maize and wheat respectively. The net sown area also shows rather a weak correlation with cultivators (0.580), there by showing that the agriculture in our study region is at subsistence level. Other parameters are having positive correlation with net sown area, but they are not as important as they draw the conclusions, which are common in a developing economy like India.

Irrigated Area:-The correlation matrix clearly shows the weak correlation of irrigated area with the cultivation of wheat and maize. However the correlation is positive with wheat cultivation (0.285) but is negative with maize cultivation (0.13). The very weak positive correlation of irrigated area with wheat

cultivation shows that it is grown with the help of irrigation in only on limited areas under wheat cultivation. On the other hand, the negative correlation between irrigated area and maize cultivation clearly indicates that the maize is grown, to a large extent, without irrigational facilities in the region and maize entirely depends on monsoon for required moisture. It may further be concluded that if the area under the maize cultivation increases, the area under irrigation may get a decrease.

Wheat Cultivation:- As stated earlier, the correlation matrix shows very high positive correlation of area under wheat and net sown area (0.967). Similarly, a high positive correlation with maize cultivation (0.880) and area under wheat exist in our study area. This, therefore, shows that though these two crops are cultivated in different seasons yet a sort of competition for area between them exists. Maize competes for area with wheat, as both are the leading crops of Kharif and Rabi season respectively. High positive correlation of wheat with cultivators (0.702) proves that a large number of cultivators are engaged in the cultivation of wheat. Wheat has very weak correlation with irrigated area (0.285) which indicates that very less area under wheat is irrigated.

Maize Cultivation:- Maize cultivation shows high positive correlation with net sown area (0.768) and wheat cultivation (0.880). In the similar way, it shows negative correlation with irrigated area (-0.13), which implies as said earlier that the maize crop largely depends on the monsoonal rainfall and not on the irrigational facilities. High positive correlation of maize with cultivators (0.745) shows that a large number of cultivators are engaged in the cultivation of maize, the second largest growing crop of the study after wheat, which is but natural as maize is labour oriented crop.

Cultivators:- Cultivators to the total population show high positive correlation with wheat (0.702) and maize (0.745). This implies that large numbers of cultivators are engaged in the cultivation of wheat and maize. On the other hand, a very weak positive correlation of cultivators with irrigated area (0.178) that a very less number of cultivators are engaged in the cultivation of those crops that are raised with the help of irrigational facilities. A very positive correlation of cultivators with total workers (0.882) implies that most of the workers in the total population are the cultivators. Thus, it includes the high percentage share of cultivators. There is also a high positive correlation of cultivators with literates (0.684), which shows that a large number of cultivators are literates and it is a good sign. It is good because if a cultivator is literate, he will be able to understand the modern techniques, which need to be applied in agriculture and that, may lead to high production. A high positive correlation of cultivator with total population (0.678) shows that a large proportion of the total population is that of cultivators, who are literates.

Total Workers:-The correlation matrix shows a very high positive correlation between total workers and literates (0.939). It implies that a large number of total workers are literates. A very high positive correlation also exists between total workers and total population (0.927). This shows that a large proportion of the total population includes the total workers. Thus, we see that large numbers of cultivators are literate and large numbers of workers are cultivators and also the share of workers in total population as seen above have been depicted by as high a positive correlation between them (workers and total population) as (0.927).

Total Population:- Total population shows a very high positive correlation with wheat cultivation (0.806) but comparatively less high positive correlation with maize cultivation (0.582). This implies that

more population out of the total population is engaged in the cultivation of wheat in comparison to maize cultivation. A very strong correlation of population with total workers (0.927) shows that the total population as stated above constitutes a large number of total workers. One more important correlation between the literates and the total population shows that there is highest positive correlation (almost perfect positive) between literates and the total population (0.999). It is a very positive sign that most of the total population is literate and as such technological information related to the increasing production of crops can be easily diffused to the literate farmers, workers and cultivators engaged in agriculture and other allied agricultural activities.

In view of the above discussion, it would now be quite appropriate to study the levels of agricultural development in the study region. The levels of agricultural development have been computed by using composite index values. The composite index values have been obtained by using the following formulation

$$C.I = \sum_{j=1}^{n} \frac{Xij}{Xj}$$

Here, xij = value f jth variate for int tehsil

N = number of variable (selected)

The values calculated, after applying the above formula for obtaining composite index, shows the level of development. If higher is the value of composite index, then higher will be the development of agriculture. The values of the composite score were made scale free by dividing the values of each variable by their respective mean (X) for each of the indicators. Then those scale free value were added to obtain composite Index for each Tehsil. The value of each column represents the relative position of each tehsil in the relative aspect. No weightage has been given to particular indicator because it has been assumed that all the indicator show equal importance in the analysis of agricultural landuse. The value of composite index so obtained for fourteen tehsils were categories into three main categories representing three levels of agricultural development. These three level has been designated as area of high agricultural development, moderate and least agriculturally developed areas. Such a categorization would divide the study area into different region depending upon the level of agricultural development. This sort of regionalization is important as it helps in planning the agriculture for future. The causes for being least developed region would become clear, and appropriate measures to remove the difficulties for the development of agriculture can be initiated. Similarly, moderately developed region can be transformed into highly developed region and highly developed region can be sustained as the level they are or can further be imported. Thus it is significantly important for an agricultural geographer and strives delineation of agriculture region based on their level of development. As such an attempt in this direction is being made in the following discussion.

Table 1.2
AGRICULTURAL DEVELOPMENT REGIONS

Rank	Categories	Composite Index Values	Name of the Tehsils	No. of Tehsils
I	High	>9	Kangra Dharamshala, Shahpur	3
II	Moderate	7-9	Baroh, Dehra, Khundian, Nurpur, Indora, Jawali, Jasisinghpur, Jaswan	8
III	Least	<7	Palampur, Baijnath, Fatehpur	3

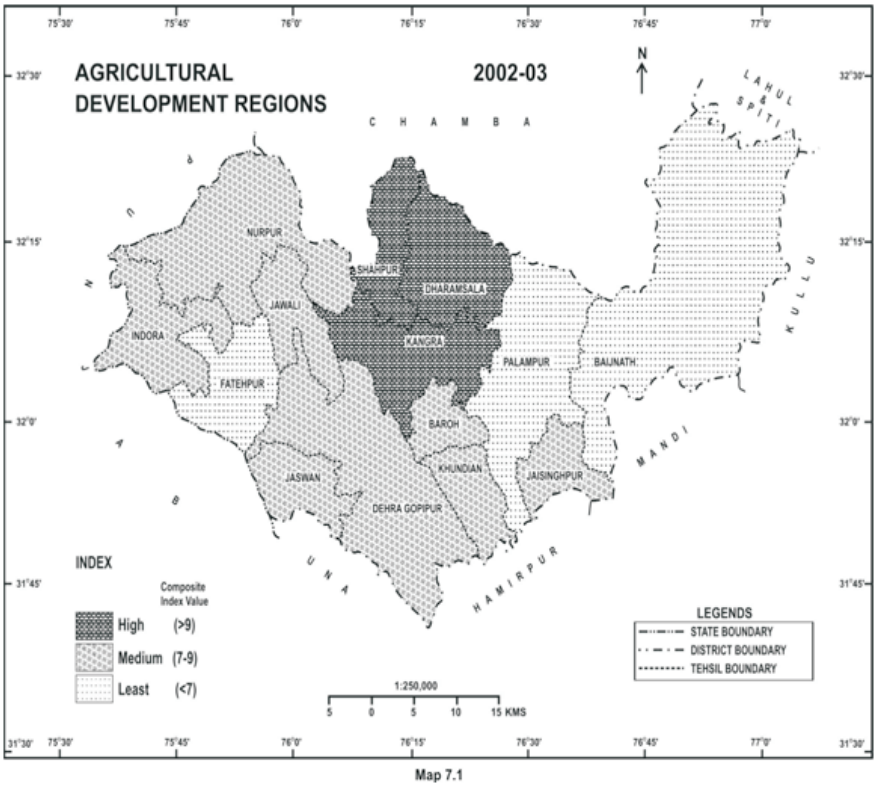
Table 1.2 shows the results of the composite score. It reveals that the selected indicators collectively influence agricultural regionalization. The collective influence of these eight indicators have been used to categorize the tehsils of the region into three categories of

1.First Ranking Region (Highly developed agricultural region)
2. Second Ranking Region (Moderately developed agricultural region).
3. Third Ranking Region (Least developed agricultural region)

It is important to mention here that the regions mentioned above do not represent the contiguous area, but consists of number of tehsils spread over the entire region. Some characteristics may be physical, social or economic are responsible for the high, moderate or least development of agriculture over an area. As such, while discussing the different regions of agricultural development in our study area, an attempt is being made to highlight these factors though in brief.

First Ranking Region: - This category represents those areas where agriculture is highly developed in comparison to the other areas of the study region. The first ranking region coovers only three tehsils. These three tehsils are Kangra, Dhararnshala and Shahpur (Map-1.2). The percentage share of tehsils covering first ranking region stands at 21.4. It is quite important to mention here that first ranking tehsils have the maximum percentage of irrigated area to gross cropped area. Kangra covers 53.7% of irrigated area. Similarly, Dharamshala covers 79.5% and Shahpur covers 67.6% of their respective areas under irrigation. Phsyiogrpahically, these areas are having comparatively flat land, as in case of Kangra tehsil and some parts of Shahpur tehsil. The percentage of literates to total population is also high in comparison to some of the other tehsils. These three being located in comparatively plain areas provide suitable conditions for the application of modern techniques in agriculture. As such in this region, modern implements of agriculture (threshers, electric motors for pumping water for irrigation, tractors etc.), chemical fertilizers are used to augment the agricultural production. Socio-economic and infrastructural development of this region has further helped the region to increase the agricultural productivity.

Map No. 1.2



Map 7.1

Second Ranking Region: - This category represents the areas, which form moderately developed agricultural region. It means that this region cannot be expected to have developed agriculture to the level of first ranking region, but on the other hand, this category has more developed agriculture than the third ranking region. The second ranking region includes 8 tehsils, which when converted into the percentage comes to 57.2 out of the total fourteen tehsils of the study region. These eight tehsils are Baroh, Dehra, Khundian, Nurpur, Indora, Jawali, Jaisinghpur and Jaswan (Map-1.2). Irrigation facilities in these areas are less in comparison to the areas of first ranking region. The cultivation of wheat and maize has the dominance in these eight tehsils of the second ranking region.

3. Third Ranking Region:- Third Ranking region includes only three tehsils that has been categorized as low agriculturally developed region. These three tehsils are Fatehpur, Palampur and Baijnath that constitute the percentage of 21.4 of the total fourteen tehsils of the study region. This category shows the least positive impact of the factors influencing agriculture selected for the agricultural regionalization. The foremost factor for the low development of agricultural is the topography. Most of the areas of Baijnath tehsil are glaciated where it is quite difficult to make the agricultural development the climate and soil are also less helpful in making the cultivation possible. The percentage of net sown area to total geographical area in Baijnath tehsil is very low which is only 5.7%. Similarly, the irrigational facilities in Fatehpur tehsil are very poor. The cultivation of maize is comparatively low in Palampur and Baijnath tehsils (Map-1.2).

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