Carring Capacity of Land in Upper Krishna Basin (Maharashtra): A Geographical Analysis

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Abstract

A study of carrying capacity of land is a good attempt in understanding the man-land relationship. It helps to find out the relative population pressure on the available arable land in different regions. In the present study an attempt is made to assess the factors affecting spatial pattern of carrying capacity of land. Tahsil is considered as a basic unit of investigation. The data and information was collected from secondary sources. The "Swaminathan’s" relative co-efficient of over population are computed by taking into consideration the standard hectare (i.e. 0.4047 hectare). The map representing categories of region of carrying capacity of land is drawn. It is found that carrying capacity of land is higher in central part especially in Karveer, Shirol, Hatanagale, Panhala, Karad and Walwa Tahsils. Southern & western parts of study region show moderate carrying capacity of land whereas tahsils of north eastern part of study region show low carrying capacity of land.

1.0 Introduction

A study of carrying capacity of land is a good attempt in understanding the man-land relationship. It helps to find out the relative population pressure on the available arable land in different regions. In the contemporary world, where the problems of food crisis and over population are real; an analysis of the carrying capacity of land is great importance.

An ever-increasing population pressure on available resources is a matter of grave concern for the present day planners. Geographers are constantly trying to check this deteriorating man land balance. However, the population pressure itself is a vaguely declined phenomenon. Its correct appraisal requires consideration of a large number of socio-economic, cultural and environmental variables.

"Population Pressure" is a loosely defined term. Generally, it referred to 'the imbalance between human numbers and their need: and between physical and human resources of the area' (Clarke, 1970). More rigorously it may be defined as 'a long term process of deteriorating physical and human conditions occurring at many scales as a result of excess numbers of human and / or animals in relation to the availability of the land to support them' (Bernord, 1977).

The carrying capacity of land is "an estimate of the number of people that an area will support in perpetuity, under a given system of land usage, without deterioration of land resources".

There seems to be a close relationship between population numbers and the carrying capacity of the land, particularly in an agrarian society where land is almost the sole support of a growing population. While the agricultural land is almost fixed in aerial extend. Population is relatively increasing and the growing numbers can be support only if there is proportionate increase in agricultural production by means of more intensive cultivation of land by taking advantage of scientific methods in agriculture.
2.0 The Study Region

The region under study is a part of Maharashtra plateau occupying mainly its western periphery, comprises the southern part of Maharashtra State covering an area of Kolhapur district in the south, parts of Sangli district in the north east and part of Satara district in the north. It extends between the Sahyadrian spurs on the west and Mahadeo Ranges on the east. Geographically, the region extends between 15°43' and 18°43' north latitude and 73°33' of 75°10' east longitude. It covers an area of 20301 Sq. Km (i.e. 6.59 per cent of the State). It includes 2812 rural and 41 urban settlements with a total population of 78,52,069 according to 2001 Census, which constitutes 8.12 per cent of the State population. This region includes 26 tahsils of Satara, Sangli and Kolhapur districts.

3.0 Objectives

1) An attempt is made to assess the factors affecting spatial pattern of carrying capacity of land.

2) An attempt has been made to investigate into the impact of geographical, economic and demographic factors on regional pattern of carrying capacity of land in upper Krishna Basin.

4.0 Research Methodology

In the present study, tahsil is considered as a basic unit of investigation. The data and information was collected from secondary sources. The "Swaminathan's" relative co-efficient of over population is computed by taking into consideration the standard hectare (i.e. 0.4047 hectare). The Location Quotient thus obtained gives the relative co-efficient of over population. The map representing categories of region of carrying capacity of land is drawn. A relative co-efficient of 1.10 may be considered as more or less marginal. It is only where this figure exceeds 1.10 that the area may say to be over populated.

The present study is mainly concerned with the village populating whose livelihood is dependent on agriculture. It constitutes a much larger proportion of the total population. As such it is now proposed to examine the pressure of rural population on agricultural land. It is felt that the only way to meet the increasing burden of population seems to be the adjustment of land use. But, the measurement of population pressure on agricultural land becomes necessary before any remedial steps can be suggested.

5.0 Discussion

The study region has been divided into four categories viz very high, high, Moderate and low on the basis of carrying capacity of land. Table 1 and Fig. 1 depict that regional pattern of carrying capacity of land. These pattern show tahasilwise structure.

Region with very high carrying capacity of land (Above 3.11)

It depicts from Fig.1 that Mahabaleshwar tahsil has recorded high land carrying capacity since 1971. In this tahsil due to low cultivated land and high rural population per capita land holding is reducing. Mahabaleshwar and Panchgani are developed as tourist centres. Entire tahsil has undulating topography consequently availability of cultivated land is low.
UPPER KRISHNA BASIN
CARRYING CAPE CITY OF LAND (In hectare)
(1961 - 2001)

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- VERY HIGH > 3.11
- HIGH 2.11 - 3.10
- MODERATE 1.11 - 2.10
- LOW <= 1.10

Fig. 1

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Panhala, Shirol, Karveer tahsils come under this category during 2001. These tahsils have high cultivable land. Sugarcane cultivation belt with commercial and agro-industrial set-up in these tahsils caused high man land ratio.

Region with high carrying capacity off land (2.11-3.00)
It seems from table 1 that, Panhala, Hatkanagale and Karveer tahsils were under this category in 1981. These tahsils are located in central part of the region where irrigated farming is practiced in Panchganga & Warna river basins. Sugar industries are also developed in these tahsils. In these tahsils well accessibility of roads and marketing activity are developed. During 1991, Shirol tahsil has added in this category, while Patan, Karad, Walwa, Gaganbawada tahsils came in this category during 2001. Technological progress in agriculture has taken place in these tahsils. In these tahsils reclamation of wasteland, development of agro based industries, development of infrastructural facilities and settlement pattern causes an increasing population attraction.

Region with Moderate Carrying Capacity of land (1.10-2.10)
During 1961, Mahabaleshwar, Patan, Walwa, Miraj, Shahuwadi, Panhala, Haltkangale, Shirol, Karveer, G.Bawada, Radhanagari. Bhudargad and Gadhinglaj tahsils included in this category (Fig. 1) Most of the tahsils of the region have equal proportion of land and population. Agricultural practices causes out migration of people for job and employment.

Table 1 shows that Wai, Jaoli, Satara, Karad, Tasgaon, Kagal, Ajra and Chandgad tahsils came under this category. It is due to development of irriganton facilities, agriculture development and agro - industrial status of the tahsils. These tahsils continued stands in this category up to 2001. It is due to positive relation between growth of rural population and available land.

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Region with low carrying capacity of land (Below1.10)

It is noted that Wai, Koregaon, Khatatv, Satara, Karad, Khanapur, Shirala, Tasgaon, Kagal, Ajra and Chandgad tahsils acquired this category during 1961 (Fig.1). These tahsils have adverse topography & climatic condition and undulating land. In these tahsils less agricultural practices and commercial activity causes out migration of people for better employment. Few tahsils of this category experiencing acute shortage of water and drought-prone condition.

During 1971, three tahsils viz, Kavathe Mahankal, Khatav and Khanapur came under this category and recorded up to 2001. In these tahsils drought prone condition causes out migration of people. It is resulted into low carrying capacity of land or low rural population on available land.

6.0 FINDINGS

Foregoing discussion reveals the spatio-temporal pattern of carrying capacity of land during 1961-2001. It is found that carrying capacity of land differ from tahsil to tahsil. Panhal, Shirol, Karveer, Hatkangale, Kagal, Satara and Mahabaleshwar tahsils show highest pressure of population on land. Whereas Walwa, Patan, Mitrj, Shahuwadi, Radhanagari, Gadhinglaj, Tasgaon, Ajra, and Chandgad tahsils show moderate carrying capacity of land due to balanced economic development, adverse
topographical and climatic conditions and low commercial practices. While Khanapur, Khatav, Gaganbawda and Kavathemahankal tahsils noted low carrying capacity of land due to out migration of people.

References