



LEVEL OF POPULATION GROWTH AND FOOD PRODUCTION IN HARYANA, INDIA

Rohtash

Research Scholar Department of Geography, M.D.U Rohtak

P.K. Chamar

M.Phil Student Department of Geography, M.D.U Rohtak

ABSTRACT

Since independence, India has passed several phases in agricultural development and most important phases in agricultural development was the green revolution of the seventies when there was a sharp increase in agricultural production, which has been reached highest level of production of food grain at present scenario. Even then all times issues of developing countries have been high population growth and the resultant needs more and more production from progressively diminishing nature base. The magnitude of the fertilizers, pesticides, HYV seeds, tractors, irrigation through tube wells etc. more than the yield capacity of land has lead to the problems of sustainability. This was prime issue and challenges of 20th century, which is also continued in 21st century, still groomed geography as an increasingly radical and relevant subject especially in this field. New ranges of social problems are emerging from such a scenario. This century is an era of unprecedented advancement in the means and information technology. Man and material mobility is a high tide. The socio economic systems are experiencing enhanced horizontal and vertical mobility. To produce more agricultural production from the available land, a new scientific approach towards its utilization is necessary because in future, there appear no scope whatever to expand the area under cultivation. It is therefore, prime duty to assess the level of agricultural production from the available land; a new scientific approach towards its utilization is necessary because in future, there appear no scope whatever to expand the area under cultivation, and its correlation with population growth. This paper is an attempt to test empirically the relationship between level of agricultural development with special reference to food production and population growth in Haryana, India.

KEYWORDS

Population Growth, Fertilizers, Pesticides, Food Grain.

Study Area:

The state of Haryana lies in the northwest of India bounded on the north-west by Punjab, on the north-east by Himachal Pradesh, on the east by U.P. and the Union Territory of Delhi and on the South by Rajasthan state. It is located between 27° 40' to 29° 42' North latitudes and 74° 54' to 77° 40' East longitudes. There are 2,11,42,980 total population inhabited in 6,955 rural settlements and 106 urban settlements spread over an area of about 44,212 Km² in the state. The density of total population, rural population and the urban population recorded as 477, 349 and 4747 persons per km² respectively. It consists of 19 districts, viz. Ambala, Yamunanagar, Kurukshetra, Kaithal, Karnal, Panipat, Sonipat, Rohtak, Faridabad, Gurgaon, Rewari, Mahendergarh, Bhiwani, Jind, Hisar, Sirsa, Fatehabad, Jhajjar and Panchkula. There are two cropping seasons namely 'Kharif' and 'Rabi' growing tropical/subtropical and temperate crops respectively. The main food grains of the state are wheat, bajra, barley of Rabi season and the Rice of Kharif season. The traditional cropping patterns have changed into new cropping patterns to provide food grain to the fast growing needy population in the last 3 decades of the area under study.

Objectives:

The main objectives of this study are as followed.

- To study the spatial pattern of population growth in Haryana during 1991-2001.
- To study the spatial pattern of food grain production in Haryana during 1991-2001.
- To study the relationship between the rate of food grain production and the rate of growth of population.
- To know the level of development of population growth and food grain production of the state.

Methodology:

The present study is based on secondary data, which have taken from various abstract of Haryana. Production of food grain is calculated in tones. Simple mathematical ratio technique and the correlation regression techniques have been

worked out. Choropleth mapping has been also used to represent the data at district level of the state.

To calculate the rate of food grain production and the rate of growth of population of the study area, the following correlation regression techniques used.

$$P_i = \frac{P_2 - P_1}{100} \dots\dots\dots (i)$$

P1

$$F_i = \frac{F_2 - F_1}{100} \dots\dots\dots (ii)$$

F1

Where P_i and F_i indicate the rate of food grains production and the rate of growth of population in percent respectively.

P₂ indicates population growth during 2001 where as P₁ indicates population during 1991.

F₁ indicates food production of 1991 and F₂ indicates food grain production during 2001.

Hence the ratio of growth rate of the population and the ratio of food grain production can be calculated as follows:

$$P : F :: \text{food grain: population growth} \dots\dots\dots (iii)$$

Fig. No. 1 and 2

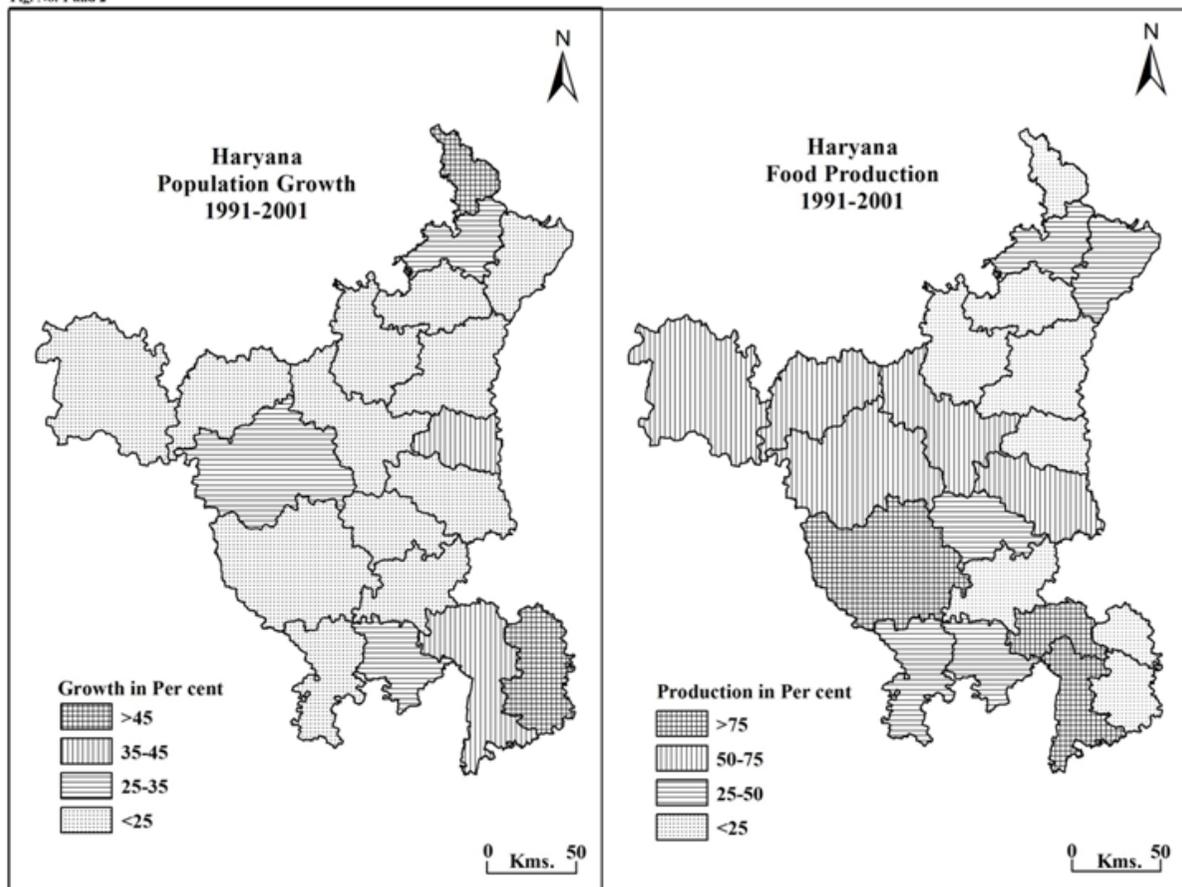


Table No. 1: Population Growth and Food Grains Production in Haryana, 1991-2001

Sr. No.	Districts	(A) Population			(B) Food Grain Production In (000) Tones				(C) Level of Development
		1991	2001	% Growth	1991	2001	% Growth	Growth Ratio	
1	Ambala	806482	1013660	25.69	432	596	38	1.15	> 3 Sonipat, Bhiwani 2-3 Rohtak, M.Garh, Jind, Sirsa, Hisar < 2 Ambala, Kaithal, Yamunanagar, Faridabad, Gurgaon, Rewari, Kurukshetra, Karnal, Panipat.
2	Bhiwani	1163400	1424554	22.45	308	589	91	3.6	
3	Faridabad	1477240	2193276	48.47	398	593	52	1.1	
4	Fatehabad	646160	806158	24.76		986			
5	Gurgaon	1146090	1657669	44.64	299	545	82		
6	Hisar	1209238	1536417	27.06	1179	1902	61	2.3	
7	Jhajjar	715136	887392	24.09		478			
8	Jind	980434	1189725	21.35	665	1072	61	2.6	
9	Kaithal	781814	945631	20.95	950	1073	13	0.9	
10	Karnal	1035390	1274843	23.13	879	1094	24	0.5	
11	Kurukshetra	669346	888120	23.72	683	781	14	0.5	
12	M.Garh	681869	812022	19.09	202	295	47	2.4	
13	Panchkula	310396	469210	51.16		78			
14	Panipat	698103	967329	38.57	537	490	-9	-0.6	
15	Rewari	610611	764727	25.24	204	278	36	1.6	
16	Rohtak	776966	940036	20.99	597	844	41	2.1	
17	Sirsa	903536	1111012	22.96	682	1143	68	2.9	
18	Sonipat	1045158	1278830	22.36	390	680	74	3.1	
19	Yamunagar	806279	982369	21.84	318	408	28	1.4	
	Haryana	16463648	21142980	28.06	9558.7	13195	38.04	1.38	

Source: Statistical Abstract of Haryana 1990-91 and 2000-01.

Spatial Pattern of Population Growth The figure 1 and table 1A show the spatial pattern of population growth of Haryana during one decade, i.e. 1991-2001. The decadal pattern of population growth reveals that the growth rate of population in Haryana varies from highest 48 percent in Faridabad district to the lowest 19 percent in Mahendergarh district (table 1A). Thus each district varies in growth rate of population in the area under study. On the basis of population growth rate at district level of the whole state, they have grouped into four categories, viz.

- Districts of very high growth rate of population (> 45 percent)
- Districts of high growth rate of population (35-45 percent)
- Districts of low growth rate of population (25-35 percent)
- Districts of very low growth rate of population (<25 percent)

(I) Districts of Very High Growth Rate of Population: It includes two districts, viz., Panchkula and Faridabad where it is recorded 51 percent and 48 percent respectively. They carved out from the districts of Ambala, Yamunanagar, and Gurgaon respectively.

(II) Districts of High Growth Rate of Population: It is found in two districts, viz., Panipat and Gurgaon where the high population growth rate recorded as 38.57 percent and 44.64 percent population respectively. Both of them attracted in migration for job opportunity in the newly established industries in Panipat and Gurgaon districts.

(III) Districts of Low Growth Rate of Population: There are three districts, viz. Ambala, Rewari and Hisar where low population growth rate recorded as 25.69 percent, 25.24 percent, and 27.06 percent respectively. Since Hisar and Rewari districts are located in rain fed areas and agriculturally very backward, hence most of the population of these districts migrated towards either Delhi or Gurgaon district for employment.

(IV) Districts of Very Low Growth Rate of Population: The very low population growth rate, i.e., < 25 percent was noted in 12 districts. Those districts are Yamunanagar records population growth as 21.31 percent, followed by Kurukshetra 23.42 percent, Kaithal 20.95 percent, Karnal 23.13 percent, Sonipat 22.36 percent, Rohtak 20.99 percent, Mahendergarh 19.05 percent, Bhiwani 22.45 percent, Jind 21.35 percent, Sirsa 22.96 percent, Fatehabad 24.76 percent and Jhajjar 24.09 percent of the area under study.

Spatial Pattern of Food Grain Production during 1991-2001:

Figure 2 and table 1B highlight about the decadal spatial pattern of the rate of food grain production of Haryana state during 1991-2001. Only rice, wheat, jowar, bajra, maize and barley are selected for calculation of the rate of food grain production in (000) tones and area in (000) hectares. It reveals that there is a great disparity in the production of food grain ranges from +91 percent in Bhiwani district to -9 percent in Panipat district indicates that this is only one heavy industrial region in the area under study. The areas of cultivated land have been rapidly included in establishing new industries in Panipat district. Resulting drastic decrease in the food grain production. However, the food grain production of the state at district level during 1991-2001 may be categories into four groups as follows:

1. Districts of very high rate of food grain production (>75 percent)
2. Districts of high rate of food grain production (50-75 percent)
3. Districts of low rate of food grain production (25-50 percent)
4. Districts of very low rate of food grain production (<25 percent)

(I) Very High Rate of Food Grain Production is observed in Bhiwani and Gurgaon districts where food grain production is recorded 91 percent and 82 percent respectively. The only

reason for very high rate of food grain production is the introduction of sprinkle irrigation and the use of fertilizer in the areas under study during one decade i.e. 1991-2001.

(II) High Rate of Food Grain Production is noted in the districts of Sonipat, Jind, Hisar, Sirsa and Fatehabad where rate of food grain production recorded as 74 percent, 61 percent, 61 percent, 68 percent and 52 percent respectively. It occurred due to introduction of HYV seeds, fertilizer and irrigation facility.

(III) Low Rate of Food Grain Production is recorded in five districts, viz. Rewari, Mahendergarh, Rohtak, Yamunanagar and Ambala where the rate of food grain production is recorded as 36 percent, 47 percent, 41 percent, 28 percent and 38 percent respectively. These districts are producing Dalhan (Pulses), Telhan (oil seeds) and cash crops because of either less irrigations facilities or the farmers interested in cash crop production.

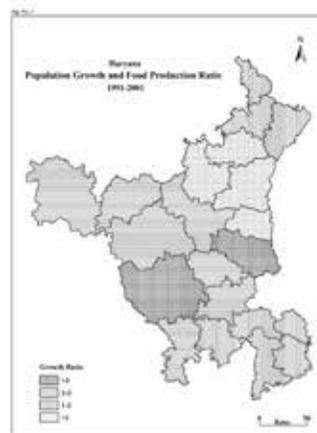
(IV) Very Low Rate of Food Grains Production found in the districts of Kaithal, Karnal, Panipat and Kurukshetra. It reveals that the rate of production of food grains fluctuates from 13 percent in Kaithal, 24 percent in Karnal, -9 percent in Panipat and 14 percent in Kurukshetra district. Since the secondary and tertiary activities as well as religious functions are dominated at these places. Hence the rate of food grain production has gone down rapidly in the areas under study.

Correlation of Rate of Population Growth and Food Grain Production:

Table 1C and the figure 3 records the ratio of growth of population and food grain production during one decade, i.e., 1991-2001 in the state of Haryana, India. To correlate the rate of the growth of population with the rate of food grain production, the ration between them have been categorized into five groups:

- (I) Very low correlation (<0)
- (II) Low correlation (0 and 1)
- (III) Medium correlation (1 and 2)
- (IV) High correlation (2 and 3)
- (V) Very high correlation (3 and >3)

(I) Very Low Correlation (< 0): The case of first category reveals that the district of Panipat recorded negative value, i.e., zero to -6 (minus point six). It means the rate of growth of population is slightly more than the rate of population of food grain (table 1C). The number of industry rapidly increases on the agricultural land; hence the rate of food grain production has gone down in Panipat district (figure 3).



(II) Low Correlation (0 and 1): The case of second category, i.e., zero and one ratio observed in the district of Kurukshetra, Karnal and Kaithal. This highlights that the rate of growth of population increased slightly lesser than the increase rate of production of food grain (1C). Due to introduction of more and more irrigation facility, introduction of HYV seeds and an increase in number of tractors; the rate of production of food grain is more than that the rate of growth of population.

(III) Medium Correlation (1 and 2): The case of third category, i.e., 1 and 2 ratio of population growth and production of food grain, five districts come under this category viz. Ambala, Yamunanagar, Faridabad, Gurgaon and Rewari. It indicates that the rate of production of food grain is faster than the growth rate of population in these districts (1C).

(IV) High Correlation (2 and 3): The fourth category, i.e., 2 and 3 ratio of population growth and the rate of production of food grain, the five districts, viz., Rohtak, Mahendergarh, Jind, Sirsa and Hisar included in this category. It means that the rate of production of food grains is faster than the rate of growth of population (1C).

(V) Very High Correlation (3 and above 3): There are two districts viz. Bhiwani and Sonipat come under this category. The rate of production of food grain is very fast in comparison to the growth rate of population, which indicate that agricultural area has been increased more than 90 percent in Bhiwani and more than 70 percent in Sonipat district during 1991-2001 (Table 1C). These districts have also the great irrigation facilities in the recent time. Hence, both districts have very good record of food grain production during decade 1991-2001.

Regression Analysis Between Population Growth and Food Grain Production:

Data reveals that as the population increases, the rate of food grain production has increased also. It seems that there is less significance relation in between the two. It means that only population is not responsible for very high rate of food growth production but other factors also.

Level of Development:

The present data analysis concerning the rate of growth of population and food grain production includes five crops, i.e. rice, wheat, bajra, millet and gram at district level of the state of Haryana, 1991-2001. The growth rate of population and production of food grain recorded in the table 1, 2 and the ratio in the table 3. On the basis of above analysis, the level of development of population growth and production of food grain is found to be negative correlation mentioned below.

Level of Population Growth and Food Grain Production:

Table 3 shows the level of growth of population and production of food grain of the state during 1991-2001. There are three level of development of the rate of growth of population and the rate of food grain production mentioned below.

High level of development of production of food grain and low level of growth rate of population (3 and >3).

Moderate level of development of production of food grain and the moderate growth rate of population (2 and 3).

Low level of development of production of food grain and the high growth rate of population (<2 and 2).

(I) In the case of first category, the high level of development of production of food grain and the low level of population growth rate recorded as 3.1 and 3.6 in Sonipat, Bhiwani respectively. It indicates that the soil is more favourable for gram, bajra and wheat crops and with the introduction of sprinkle irrigation, favourable Geo-ecological conditions and the production of above crops increased drastically in Bhiwani district. It is also noted that due to very high area included in this category, the high rate of food grain production found in Sonipat also. However, the rate of growth of population has been decreased due to out migration of non-working agricultural population towards industrially dominated districts of the state.

(II) In the case of second category, moderate level of food grain production and moderate growth rate of population noted in those districts where wheat, rice, gram, oil seeds, bajra, cotton are the main crops. These districts are Rohtak, Mahendergarh, Jind, Sirsa and Hisar. The following factors are responsible for moderate level of food grain production, i.e. Size of land holdings and less consumption of fertilizers and the moderate rate of growth of population due to less number of small/large scale industries.

(III) In this case of third category, low level of development of food grain production and high level growth rate of population found in the districts of Ambala, Kaithal, Yamunanagar, Faridabad, Gurgaon, Rewari, Kurukshetra, Karnal and Panipat. The following factors are responsible for low production of food grain, i.e. socio-economic conditions, climatic conditions, water logging and low level of underground water. Among these some important districts which have more number of small/large scale industry attracted more and more non-skilled labourer/workers from outside and from within. Therefore, the population growth rate is more in the districts of Panipat, Faridabad, Ambala and Gurgaon.

Conclusion:

The present study shows a significant disparity in the level of development of food grain production and the population growth and has no parallelism to each other. There is an exceptional case of district Panipat where low growth rate of population and low food grain production recorded, i.e. -0.6 (minus point six). It indicates that due to establishment of new industries, more agricultural land converted into non-agricultural activities, the growth rate of food production has gone to minus but in contrast, the districts of Ambala, Yamunanagar, Faridabad and Gurgaon attracted some workers from outside of the district/state so the population growth become slightly better. In the case of Rewari, the rate of food production is just keeping pace with the growth rate of population. However, in Bhiwani, Sonipat and Sirsa districts, the rate of food grain production is very high than the rate of population growth because of no opportunity to retain non-agricultural workers by establishing new industries in these districts of the state of Haryana during decade 1991-2001.

REFERENCES

1. District Census Handbook, Haryana State, 2001. | 2. Census of India, General Population Table, Series 8, (Haryana) part II-B, 1991. | 3. Statistical Abstract of Haryana, 1989-90, 1990-91, 1991-92. | 4. Statistical Abstract of Haryana, 1999-2000, 2000-01, 2001-02. | 5. Tiwari, R.K., (1997), "A study of Rural population and Food production in Jharkhand Region", Geographical Review of India, Vol. 59, No. 2, pp. 132-141. | 6. Hussain Majid, (1975), "Ganga-Yamuna Doab- A study in the patterns of crop concentration", Geographical Review of India, Vol. 37, No. 3, pp. 250-258. | 7. Singh, Jhujar. (1979), "A Spatio-Temporal Analysis of cropping patterns and crop Association in Punjab- during 1951-1970", National Geographical Journal of India, Vol. 25, No. 3, pp.215. | 8. Singh, Jasbir and Dhillon, S.S. (1984), Agricultural Geography, Tata McGraw Hill Publishing Company Ltd., New Delhi. | 9. Reddy, G.J. and N.B.K. Reddy, "Agricultural Development in the District of Andhra Pradesh", The Indian Geographical Journal, Vol. 68, No. 2, Dec. 1993, pp.41-47. | 10. Khan, W. (1997). "Agricultural Development in western U.P. India", The Indian Geographical Journal, Vol. 72, No. 2, pp.146-149. |