Levels of Agricultural Development in Ahirwal Region of Haryana during Post Liberalization Period

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Abstract

The present study discusses the levels of agricultural development in Ahirwal region of the state during post liberalization period. For the study of agricultural development of the region a composite index has been constructed with the help of various indicators of agriculture. The data related to various aspects of agriculture have been collected from Statistical Abstracts, Department of Economic and Statistical Analysis, Haryana. The data pertaining to agriculture indicators have been collected for three triennium, i.e. 1989-92, 1999-02 and 2010-13. In the present paper an attempt has been made to find out the spatial variation in the level of agricultural development in Ahirwal region. The study brings out that the region is lags behind the rest of Haryana in terms of indicators of agricultural development. Rewari district is most agriculturally developed district whereas least agriculturally developed is Mahendragarh district.

Keywords: Levels, agriculture, variations, post liberalization period, development.

Introduction

Haryana is the state which has large amount of fertile land, in India. It is doing well in industrial as well as agricultural sectors. About 70% of the population is engaged in agriculture, directly or indirectly. Haryana has achieved a remarkable growth in its agricultural sector, which not only has made it self-sufficient in foodgrains production but also has elevated it to the second largest contributor to India's central pool of foodgrain (Economics survey of Haryana, 2007-08). Agricultural development is a continuous process of improvement of crop production. The level of agricultural development is affected by several factors such as size of cultivable area, infrastructural facilities, state of farm technology and a balanced human resource etc. Thus, the extent of development in agriculture cannot be captured on the basis of any single indicator (Jena, 2014). Agriculture has remained the prime sector of Indian economy in view of its major share in employment

and livelihood creation. It is central to all strategies of planned socio-economic development in India (Khan and Khalil,2013; Raman and Kumari, 2012; Tripathi and Prasad, 2009).).

Indian agriculture has achieved remarkable progress in the level of agricultural development. The growth of agriculture is prerequisite for overall development of Indian economy. The introduction of Green revolution had remarkably increased the agricultural production and productivity. Expansion of irrigation facilities, high use of chemical fertilizers and high yield variety seed especially in wheat and rice crop cultivation after the green revolution (Singh, 2015; Mohammed, 1980). It has played a significant role in poverty alleviation, meeting the food requirements of the existing population and providing raw materials to various industries but its share in gross domestic production of the nation has continuously declined over the period (GOI, 2014). Our country has made progress in agriculture but productivity of our major agricultural and horticultural crops is very low in comparison to other countries. Our agriculture is still technology deficit. Yields per hectare of food grain, fruits and vegetables in our country are far the below global averages (Gautam and Kumar, 2014). Growth process in agricultural sector does not operate at an even pace over a time. The experience is that agricultural growth pattern exhibits notable variation between crops, districts and even from year to year (Jahagirdar and Alexander, 2008). However, these changes in agriculture are not uniform all over the state. Therefore, the present study attempts to explore the level of agricultural development in the Ahirwal region of the state.

Objectives

- To study the pattern of agricultural development in the region as compared to rest of Haryana.

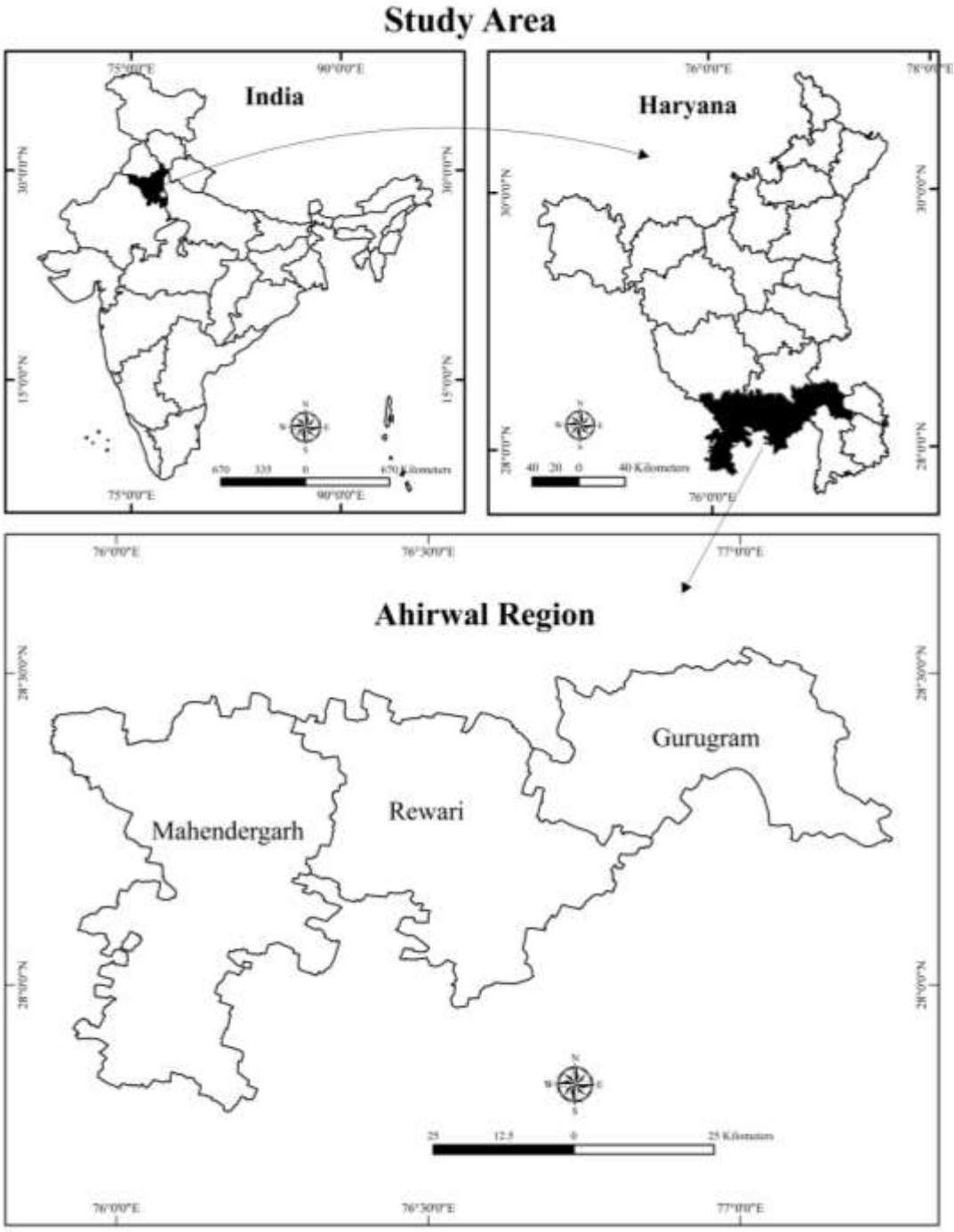


Figure 1. Location of Ahirwal Region.

- To examine the inter district variation in indicators of agriculture within Ahirwal region.

Study Area

The present study pertains to Ahirwal region in Haryana which is a socio-cultural region lying in southwestern Haryana. Though this region does not actually follow the boundary of administrative unit, for the purpose of the present study the districts of Gurugram, Rewari and Mahendergarh which constitute bulk of its territory have been assumed to constitute it (Fig.1). Ahirwal region extends between latitudes 27◦ 79´ to 28◦ 54´ N and longitudes 75 ◦ 89´ and 77 ◦ 24´ E. It covers a geographical area of about 4751 km, forming about 10.74 percent of the total

geographical area of the state and accounting for 13.16 percent of the total population in 2011. Ahirwal region is bordered by Bhiwani and Jhajjar districts in the north, Delhi, Faridabad, Palwal and Mewat districts in the east and Rajasthan in the west and south.

Data Base and Methodology

The present study is based on secondary data. The data related to various aspects of agriculture such as total cropped area (TCA), net sown area (NSA), net area irrigated (NAI), gross area irrigated (GAI), total geographical area (TGA), consumption of chemical fertilizers, use of pesticides, tractors, pumping sets have been collected from Statistical Abstracts, Department of Economic and Statistical Analysis, Haryana. Present study basically focuses on post liberalization period. The data pertaining to agricultural indicators has been collected for three trienniums, i.e. 1989-92, 1999-02 and 2010-13. All the crops occupying one percent or more of total cropped area have been taken into account to calculate the agricultural productivity (Bhalla and Tyagi, 1989). Analysis of a number of indicators of agricultural development at individual level does not provide an integrated and easily comprehensible picture of the reality. Therefore, composite index of development based upon combination of different agricultural indicators have been computed by following the statistical procedure of Amitabh kundu (1992). To calculate the index, first of all state average has been considered as mean. After that each value of indicators have divided by the mean (state average), one can get free of the bias of scale without affecting the relative position of the districts in the series. After that the obtained values of different indicators have been summed. Subsequently, the summed value is divided by the number of observation to get the value of composite index.

In total of nine developmental indicators have been selected to analyze the levels of agricultural development in Ahirwal region vis-a vis the rest of Haryana.

Agricultural Development

1. Cropping Intensity (TCA/NSA×100)
2. Irrigation Intensity (GAI/NAI×100)
3. Percentage of NAI to NSA
4. Percentage of NSA to TGA
5. Agricultural Productivity (Rs/Ha)

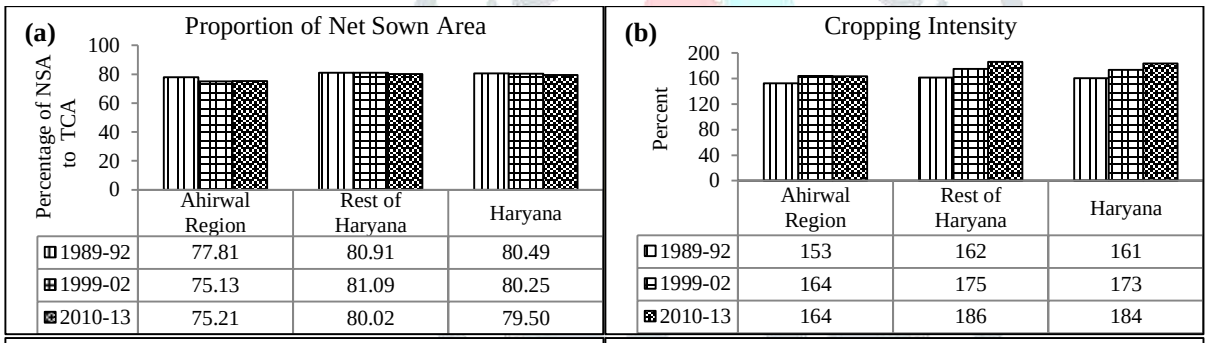
6. Consumption of Chemical Fertilizers (Kg/Ha)
7. Application of Pesticides (Kg/Ha)
8. Number of Tractors (Per 1000 Ha)
9. Number of Pumping Sets (Per 1000 Ha)

Parameters of Agricultural Development

Figure 2 and 3 depict four crucial parameters of agricultural development namely proportion of net sown area in total geographical area, intensity of cropping, proportion of net area irrigated and intensity of irrigation in Haryana, rest of Haryana, Ahirwal region and at district level within region.

In Haryana net sown area covered about 80 percent of geographical area in 1989-92. It reveals the domination of agriculture in the state which has been maintained over last two decades as well. In comparison to rest of Haryana Ahirwal region however has relatively less area under plough. The

proportion of net sown area in the region was about 78 percent in 1989-92 which declined to 75 percent in 2010-13. This may be attributed to presence of Aravali ridges and urban sprawls around Gurugram.



	Ahirwal Region	Rest of Haryana	Haryana
1989-92	77.81	80.91	80.49
1999-02	75.13	81.09	80.25
2010-13	75.21	80.02	79.50

	Ahirwal Region	Rest of Haryana	Haryana
1989-92	153	162	161
1999-02	164	175	173
2010-13	164	186	184

	Ahirwal Region	Rest of Haryana	Haryana
1989-92	57.03	74.21	74.21
1999-02	63.69	85.38	82.53
2010-13	70.99	87.62	85.93

	Ahirwal region	Rest of Haryana	Haryana
1989-92	126	166	162
1999-02	157	181	178
2010-13	155	189	186

Figure 2 (a-d). Pattern of (a) proportion of net sown area (b) cropping intensity (c) proportion of irrigated area (d) irrigation intensity.

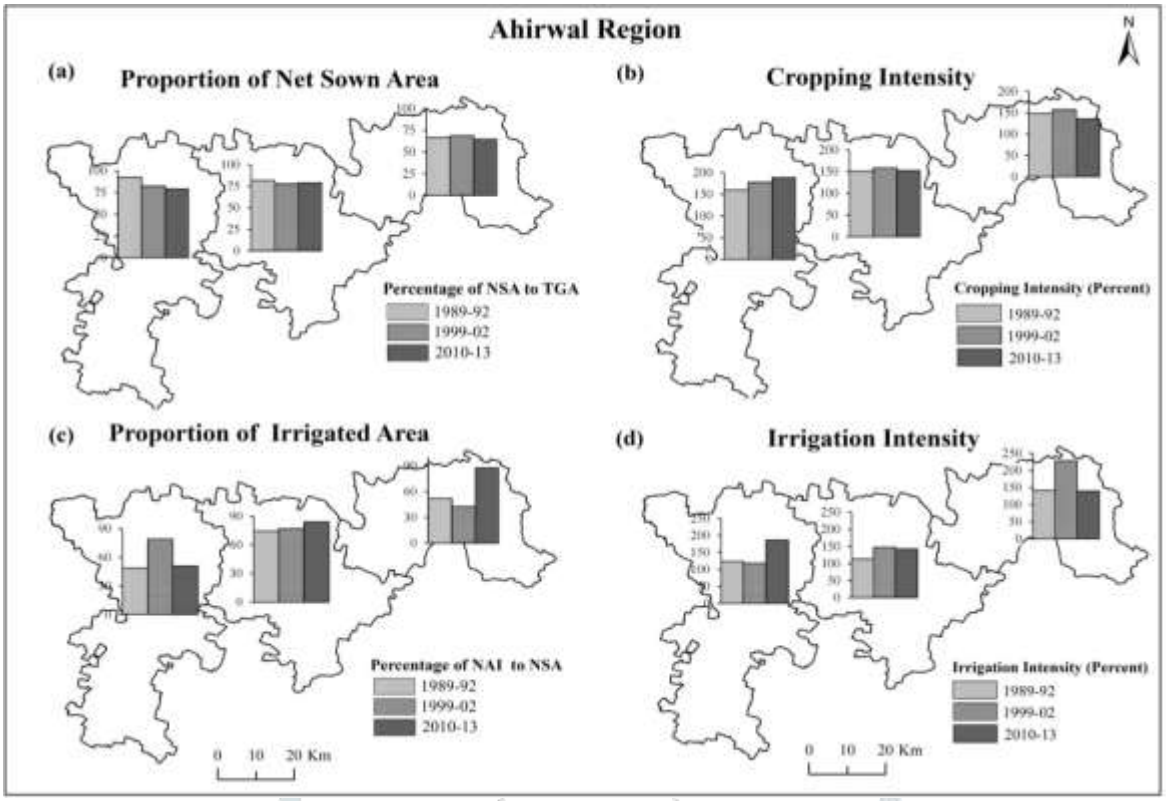
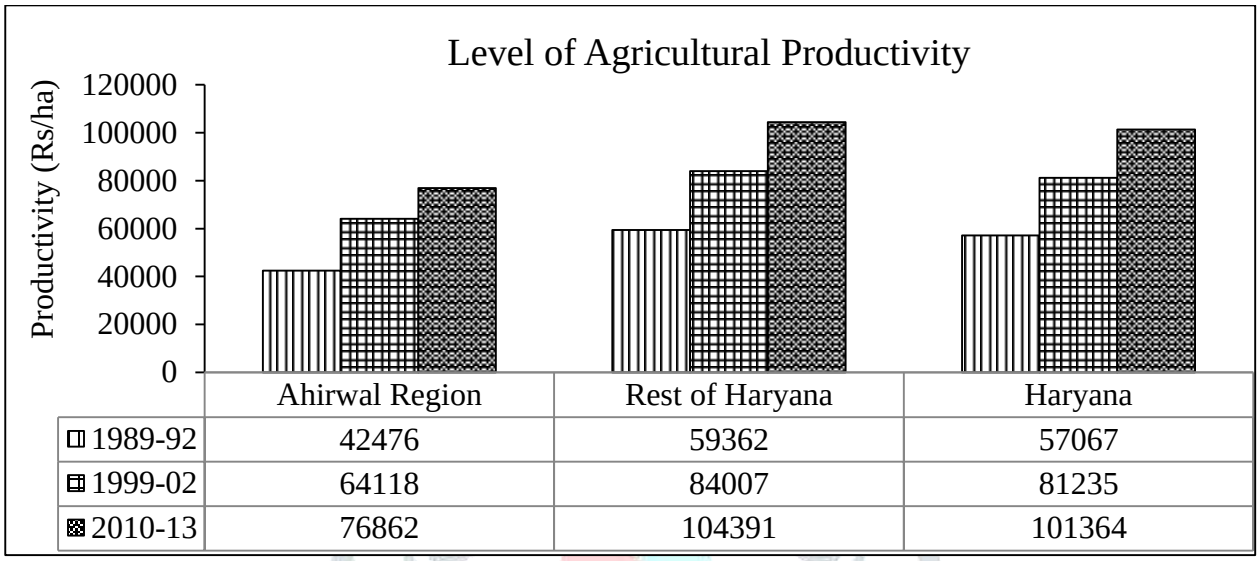


Figure 3 (a-d). Spatial pattern of (a) cropping intensity (b) irrigation intensity (c) proportion of irrigated area (d) proportion of net sown area in Ahirwal Region.

Interestingly, Gurugram district had lowest proportion of cultivated area in Ahirwal region all through period. Mahendergarh district had highest proportion of net sown area followed by Rewari district. The intensity of cropping is another important indicator of agricultural development. It is revealed that in 1989-92, the intensity of cropping the Ahirwal region was rather low (153 percent) (Figure 2b). Cropping intensity is comparatively higher in the rest of Haryana as compared to Ahirwal region during the study period. Mahendergarh district has recorded highest intensity of cropping in the region which was 160 percent in 1989-92, 178 percent in 1999-02 and 188 percent in 2010-13(Figure 3b). Gurugram district has lowest intensity of cropping in the region during the last two decades.

Irrigation development has been the basis of agricultural development in Haryana. But Ahirwal has been backward in terms of irrigation development. In 1989-92 about 74 percent net sown area in the state was irrigated. But in comparison to this in Ahirwal region only 57 percent cultivated area was irrigated. Irrigated area expanded all over Haryana during next two decades but at higher pace in Ahirwal region. It reveals that Ahirwal region continues to be lagging behind rest of state in this regard. Figure 3c depicts that Rewari district had highest proportion of irrigated area in Ahirwal region during the last two decades. Proportion of irrigated area has increased fast in Gurugram district as well. It may be related to fast depleting groundwater resources

in the district. The intensity of irrigation is an indicator of efficiency of irrigation resource utilization. It is the ratio of gross area irrigated to net area irrigated in terms of percentage. Figure 2d shows that the intensity of irrigation has continuously increased in Haryana, from 162 percent in 1989-92 to 178 percent in 1999-02 and 186 percent in 2010-13. While in Ahirwal region it has been



	Ahirwal Region	Rest of Haryana	Haryana
1989-92	42476	59362	57067
1999-02	64118	84007	81235
2010-13	76862	104391	101364

Figure 4. Pattern of agricultural productivity.

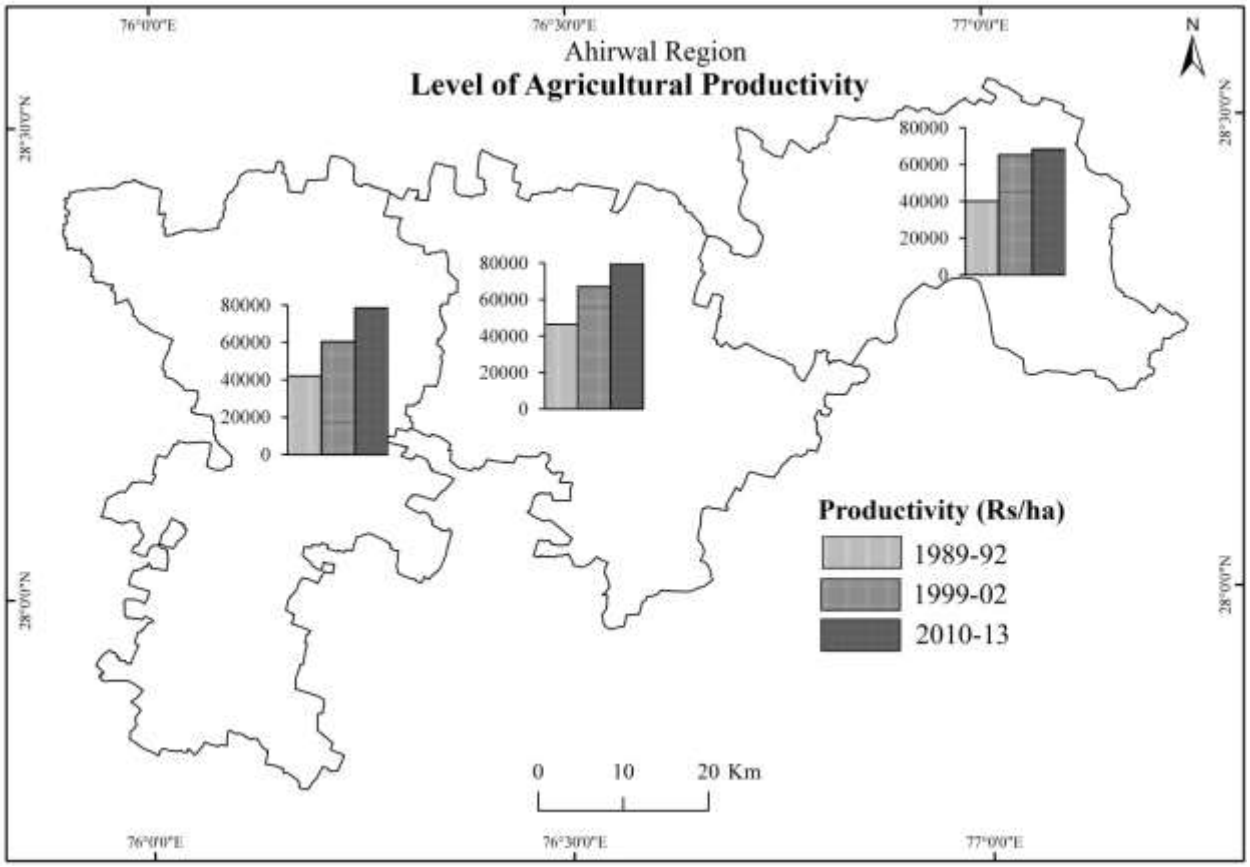
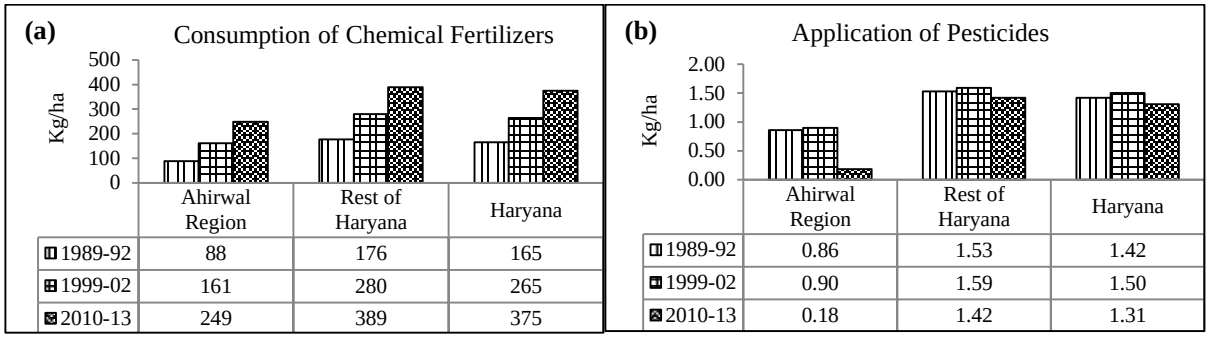


Figure 5. Spatial pattern of agricultural productivity in Ahirwal Region.



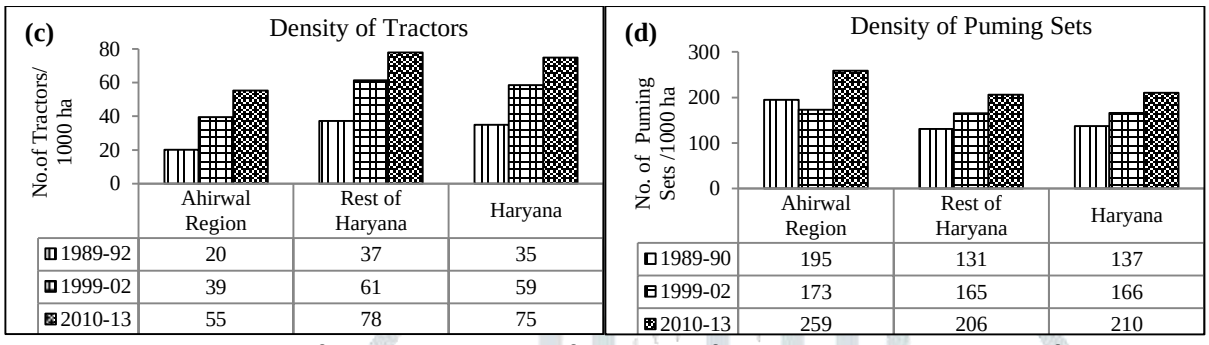


Figure 6 (a-d). Pattern of (a) consumption of chemical fertilizers (b) application of pesticides (c) density of tractors (d) density of pumping sets.

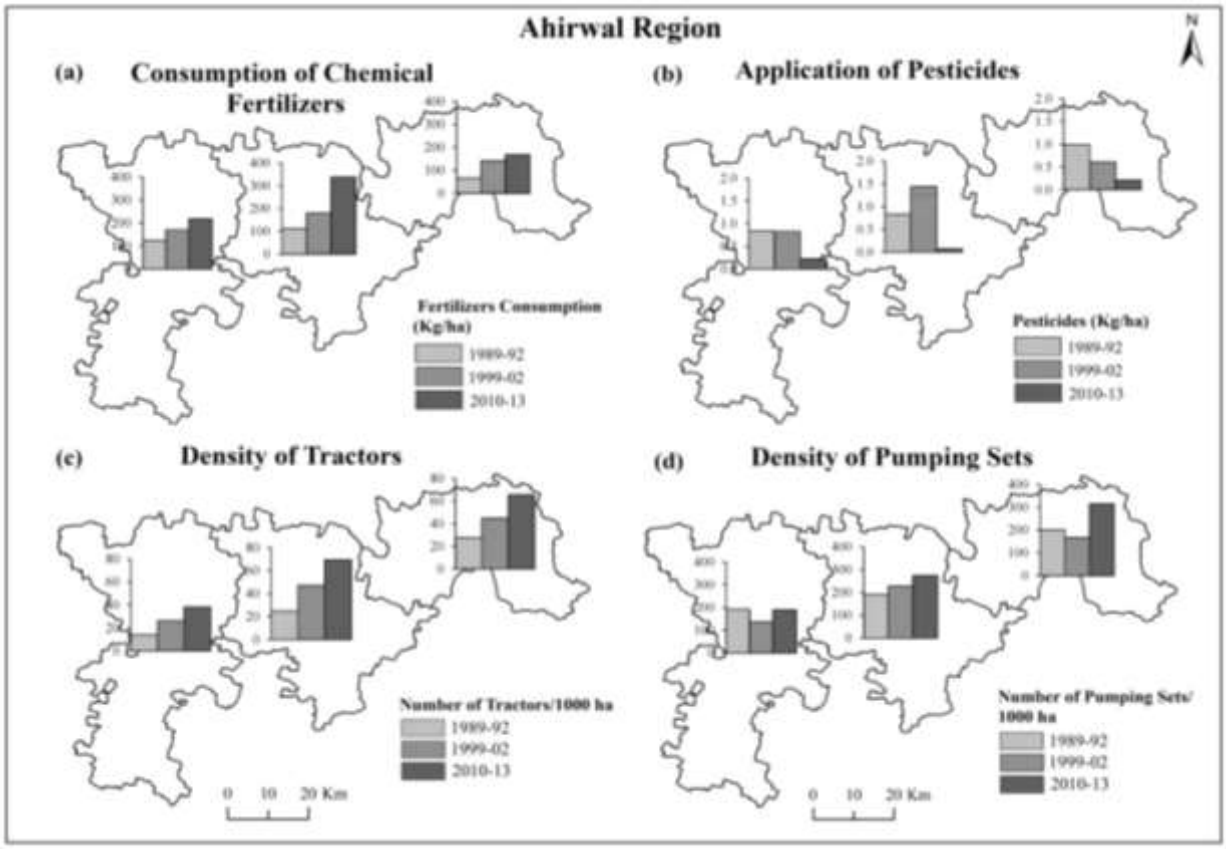


Figure 7 (a-d). Spatial pattern of (a) consumption of chemical fertilizers (b) application of pesticides (c) density of tractors (d) density of pumping sets in Ahirwal Region.

continuously less than the state average and rest of Haryana. It was 126 percent in 1989-92 which increased to 157 percent in 1999-02 but slightly declined to 155 percent in 2010-13. Figure 3d depicts spatial variations in the intensity of irrigation over the region which has variable over last two decades.

Level of agricultural productivity (output in money terms per ha) is a composite outcome of inputs per unit of land. Figure 4 reveals that the level of agricultural productivity has consistently increased in Haryana during last two decades. This is true in case of Ahirwal region also but its level is significantly lower than rest of Haryana. There are inter-district variations in agricultural productivity within Ahirwal region as well. Rewari district has recorded highest agricultural productivity in the region during last two decades and it was close to Rs 80000 in 2010-13. Mahendergarh district has also come up well during last two decades.

The pattern of chemical fertilizer, pesticides, density of tractor and pumping sets have been depicted by Figure 6(a-d) and inter district variation in Figure 7(a-d). Fertilizer, the most important component of new technology has played a very important role in enhancing the agricultural production and ushering in green revolution in the State. Consumption of chemical fertilizers has increased since the introduction of high yielding varieties in the state. It is evident from the figure 6a. Per ha consumption of chemical fertilizers was 165 kg in the state in 1989-92 which increased to 265 kg in 1999-02 and 375 kg in 2010-13. Within Ahirwal region also there has been significant inter-district variation in fertilizer consumption. Its consumption is quite high (388 kg/ha) in Rewari district and low in Gurugram district (168 kg/ha).

It may be observed from the Figure 6b that use of pesticides in Haryana increased from 1.42 kg/ha to 1.50 kg/ha between 1989-92 and 1999-02 and thereafter it slightly declined to 1.31 kg in 2010-13. But pesticide consumption in the Ahirwal region has been quite low in comparison to rest of Haryana. Figure 4b reveals that pesticide uses has rapidly declined all over Ahirwal region whereas it has been slightly decline in the rest of Haryana. It is least in Rewari district.

The density of tractors may be taken as an indicator of farm mechanization. As shown in the figure 6c there were only 20 tractors per thousand ha of cultivated area in 1989-92 in Ahirwal region. The density increased to 39 tractors in 1999-02 and 55 tractors in 2010-13. But tractor density in this region is quite low in comparison of rest of Haryana where there were 78 tractors per thousand ha area in 2010-13. In Haryana the density of tractors has increased fast during last two decades from 35 to 75 tractors per thousand ha over the period 1989-92 to 2010-13. Figure 7c shows that the density of tractors has increased in all the districts of Ahirwal region as well. Highest number of tractors per thousand ha area in Ahirwal region is found in Rewari

district (69) closely followed by Gurugram district (66). But tractor density is very low in Mahendergarh district (38).

Pumping sets are means of extraction of groundwater and lifting of surface water. Figure 6d presents that the density of pumping sets (number per thousand ha of net sown area). Interestingly, density of pumping sets in Ahirwal region is highest in Haryana. Density of pumping sets in the region has increased from 178 to 248 over the period 1989-92 to 2010-13. On the other hand it has increased from 137 to 210 during the same period in the state. This is only parameter of agricultural development where Ahirwal region does better than rest of Haryana. Figure 5d indicates that Gurugram district has highest density of pumping sets (314) followed by Rewari district (275). Pumping sets density has been stagnant over last two decades in Mahendergarh district.

Table1: Composite Index of Agricultural Development

Districts/Area	1989-92	1999-02	2010-13
Gurugram	0.82	0.79	0.76
Rewari	0.87	0.92	0.83
Mahendragarh	0.83	0.76	0.72
Ahirwal Region	**0.84**	**0.81**	**0.77**
Rest of Haryana	**1.03**	**1.03**	**1.02**

Source: Computed by Researcher

Composite Index of Agricultural Development

The composite index of agricultural development in the rest of Haryana, Ahirwal region and within the region has been depicted by Table 1. Index value above 1 indicates agriculturally advancement with respect to state average. Whereas, index value less than 1 represents agriculturally backwardness in relation to state average. It has observed that the value of the scores of agricultural development varied from 0.80 to 0.81 between 1989-92 and 1999-02 which declined to 0.77 in 2010-13 in the study region. The value of the score in the rest of Haryana was 1.03 in 1989-92, no changed in 1999-02 and declined to 1.02 during 2010-13 in the rest of Haryana. It is evident from Table 1 that the highest value of the score has found in the rest of Haryana in terms of agricultural development as compared to Ahirwal region. In other words, the value of score in the rest of Haryana has found above the state average in case of agricultural development. It has been noticed that the rest of Haryana is most agriculturally developed than Ahirwal region. Table 1 also depicted that the district wise value of score in the study region in respect to agricultural development. Rewari district has

recorded the highest value of the score as compared to other districts of Ahirwal region. Gurugram district has found lowest value of score in 1989-92 whereas Mahendergarh district has registered the lowest value of score after 1999-02. It has observed that Rewari district is most agriculturally developed district whereas least agriculturally developed is Mahendergarh district.

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