CHAPTER 6
AGRICULTURAL PRODUCTIVITY AND REGIONAL DEVELOPMENT

After examining the regional patterns of agricultural productivity and dimensions of regional development in the study area, it would be worthwhile to study the levels of development in relation to agricultural productivity.

Regional development has been interpreted as intra-regional development designed to legitimately reduce disparities in development through planning. However, before planning, the regions lagging behind are to be demarcated and components of development are to be analysed.

Agriculture in India through its multifarious relationships has bearing on the industrial, urban, technological and social development. Agriculture itself is a system composed of multiple components and productivity measure the efficiency of the entire agricultural system. Therefore, level of agricultural productivity can safely be relied upon as a measure of development in agriculture.

Agriculture can contribute significantly to overall development as it provides increased food surplus to the growing population, helps to expand the secondary and tertiary sectors, increases rural incomes and improves the welfare of the rural population of the region. Furthermore, agriculture's contribution in promoting overall
development can be summarised in five propositions:

(1) Agriculture must provide adequate food supplies for rapidly increasing population in the developing countries.

(2) Agricultural development is essential for supplying raw materials for the expanding industrial economy and increasing foreign exchange earnings through enlarged agricultural exports.

(3) Agriculture helps development by providing an expanded market for industry and manufactured consumer's goods.

(4) Agricultural development can facilitate the development of industry by releasing labour from agriculture to non agricultural sectors.

(5) Agricultural development also brings about social and cultural development as increased per capita income in rural areas invariably results in increased literacy and level of education which are conducive for social transformation.

It is clear that, under all circumstances, increasing agricultural productivity makes important contribution to regional development and that, within considerable limits at least, it is one of the preconditions which must be established before a takeoff into self sustained economic growth becomes possible. It is equally clear that social and cultural change necessary to assimilate new industrial and technological development is possible through increased agricultural production.
The main objective of this chapter is to find out empirically as to what extent this theoretically postulated relationship between agricultural productivity and levels of development holds true in the case of the area under study. It would be worthwhile to test this hypothesis and to find out whether or not the high agricultural productivity regions of Bihar are well developed regions. A comparative study of agricultural productivity and levels of development will give significant results. For the purpose of this study composite indices of agricultural productivity and levels of development are constructed.

**Composite Index of Agricultural Productivity**

**Computational Procedure**

Regional patterns of the agricultural productivity in Bihar have been examined by combining two different indices of agricultural productivity. The two different indices of agricultural productivity is considered here as two variables. To obtain the composite index the equation may algebraically be expressed as follows:

\[
\text{C.I.} = \frac{x \cdot \bar{x}/\delta_1 + y \cdot \bar{y}/\delta_2}{\bar{x}/\delta_1 + \bar{y}/\delta_2}
\]

\[
\text{C.I.} = \text{composite index}
\]

\[
X = \text{represents the items in the first variable i.e. agricultural productivity based on yang's Crop yield index.}
\]

\[
Y = \text{represents the items in the second variable i.e. agricultural productivity based on out put per hectare of crop (in Rs.)}
\]
\[ \bar{X} = \text{mean value of the first variable in the entire region} \]
\[ \bar{Y} = \text{mean value of the second variable in the entire region} \]
\[ \delta_1 = \text{Standard deviation of first variable} \]
\[ \delta_2 = \text{Standard deviation of second variable} \]

The computed composite indices of the productivity have a wide range of variation among the districts within the study region. The inter-districts variation may conveniently be grouped into five grades of very high, high, medium, low and very low agricultural productivity with the help of their standard deviation from the mean.

**Regional Patterns (1980-81)**

**Very High and High Agricultural Productivity**

The distributional patterns of the composite agricultural productivity for the year 1980-81 have been plotted in Fig. 27. It may be observed from the Fig. 27 that the very high agricultural productivity is found in the northern and central parts of the state. In fact the districts of very high agricultural productivity form two small regions; one lie in the north-western part of the state comprises the districts of West Champaran and East Champaran, the second lie in the central part and includes the districts of Samastipur, Begusarai, Nalanda and Patna. The areas of high agricultural productivity are generally found in the northern part of the state. The districts of high agricultural productivity do not form any significant region as they are scattered apart. The districts under high agricultural productivity are Siwan, Rohtas, Sitamarhi, Nawada, Purnia and Bhagalpur.
**Medium Agricultural Productivity**

Areas under medium agricultural productivity form three contiguous regions, the first lie in the central-western part of the state and includes the districts of Gopalganj, Saran, Bhojpur, Vaishali, Muzaffarpur and Darbhanga, the second lie in the central-eastern part of the state and includes the districts of Santhal Pargana and Munger and the third lie in the southern part and includes the districts of Hazaribagh and Ranchi.

**Low and Very Low Agricultural Productivity**

The regional distribution of agricultural productivity shows that in southern part of the state, the productivity of land is low or very low. The districts having low agricultural productivity are Gaya, Aurangabad, Dhanbad, Singhbhum, Katihar, Saharsa and Madhubani, whereas the districts of Palamu and Giridih have very low agricultural productivity.

**Regional Patterns (1990-91)**

**Very High and High Agricultural Productivity**

The distributional patterns of composite index of agricultural productivity for the year 1990-91 have been plotted in Fig 28. It may be observed from the Fig 28 that very high agricultural productivity form a large contiguous region in the north-western part of the state and includes the districts of West Champaran, East Champaran, Gopalganj, Siwan and Saran. Apart from this there are two small regions...
of very high agricultural productivity in the central part of the state. It includes the districts of Samastipur, Begusarai, Nalanda and Nawada.

The areas of high agricultural productivity form a large contiguous region in the central-western part of the state. The districts which form this region are Rohtas, Bhojpur, Patna, Vaishali, Muzaffarpur, Darbhanga, Sitamarhi and Munger. Katihar is the only district of high agricultural productivity which do not form any region.

**Medium Agricultural Productivity**

The areas of medium agricultural productivity form a large contiguous region in the north-eastern part of the state which includes the districts of Madhubani, Saharsa, Khagaria, Araria, Kishanganj, Purnia, Bhagalpur, Godda and Sahibganj. There are two small regions of medium agricultural productivity; one in the central part comprising the districts of Jehandabad, Aurangabad; and other in the southern part of the state comprising the districts of Lohardaga, Ranchi and Giridih.

**Low and Very Low Agricultural Productivity**

Most of the districts of the southern Bihar either have low or very low agricultural productivity. The districts of low agricultural productivity are Gumla, Hazaribagh, Dhanbad and Deoghar; whereas the districts of very low agricultural productivity are Madhepura, Dumka, Palamu, Singhbhum East and Singhbhum West.
Composite Index of the Regional Development

Computational Procedure

The composite index of the regional development is, in fact, a weighted aggregate of the five factors of development as discussed in Chapter 5. The standardized factor scores of each factor are multiplied respectively by the respective percentage of total variance which they explain. As such, each dimension of development is weighted according to its contribution to the development levels in the area. These factor scores of the four dimensions of the development are added together to give a composite index of development. (Appendices, G and H).

To obtain the composite index in order to assess the regional development, the equation may be algebraically be expressed as:

\[
C.I. = \frac{X_1 \delta_1 + X_2 \delta_2 + X_3 \delta_3 + \ldots + X_{20} \delta_{20}}{\bar{X}/\delta_1 + \bar{X}/\delta_2 + \bar{X}/\delta_3 + \ldots + \bar{X}/\delta_{20}}
\]

where \(C.I.\) = composite index

\(X_1, X_2, \ldots, X_{20}\) = the number of variable considered

\(\bar{X}\) = the mean value of the variable in the entire region.

\(\delta\) = standard deviation of each variable.

The computed composite indices of the variables have a wide range of variation among the districts of the state. The inter districts variation may conveniently be grouped into five grades of vary high, high, medium, low and very low levels of development with the help of their standard deviation from the mean.
Regional Patterns (1980-81)

Very High and High Development

The regional patterns of the levels of development for the year 1980-81 have been shown in Fig. 29. It may be observed from the Fig.29 that there are only four districts namely, Patna, Nalanda, Ranchi and Dhanbad which have very high level of development. Out of these four districts Patna and Nalanda form a very small region of very high level of development in the central part of the state but Ranchi and Dhanbad do not form any region.

The districts having high level of development are Gaya, Nawada and Singhbhum. Gaya and Nawada form a small region of high level of development in the central part of the state.

It is interesting to note that the almost all the districts of very high and high development have strong association with the dimension of mechanization of agriculture in the Central part of the state, but in the southern part of the state they do not have any association with the mechanization of agriculture. In the southern part of the state the districts of very high and high levels of development have strong association with the dimensions of infrastructural development and industrialization.

Medium Level of Development

The districts of medium level of development are concentrated in the north-western part of the state and form a small region in this part of the state. The districts of medium level of development are
Saian, Vaishali, Muzaffarpur and West Champaran. The districts of medium level of development exhibit scores ranging from very high to very low on the dimensions of agricultural mechanization and education, infrastructural development and industrialization, institutional development and agricultural intensity, and urbanization and modernization. However, the majority of districts score moderately on these dimensions.

**Low and Very Low Level of Development**

The most of the districts of the study area for the year 1980-81 either have low level of development or very low level of development. This indicates that the development of the state is generally low. The districts having low level of development are Siwan, East Champaran, Bhoipur, Aurangabad, Darbhanga, Samastipur, Begusarai, and Hazaribagh. Whereas the districts having very low level of development are mainly confined to the areas of northern part of the state which is agriculturally rich as compared to southern part of the state. The districts of very low level of development are Sitamarhi, Madhubani, Saharsa, Purnia, Katihar, Munger, Bhagalpur, Santhal Pargana, Giridih, and Palamu.

**Regional Patterns (1990-91)**

**Very High and High Level of Development**

The regional patterns of the level of development for the year 1990-91 have been plotted in the Fig. 30. It may be observed from the Fig. 30 that there are four districts having very high level of
BIHAR
LEVELS OF DEVELOPMENT
COMPOSITE INDEX
1990-91

FIG. 30
development. The districts of Patna, Nalanda, Ranchi and Dhanbad. The districts of Patna and Nalanda form a small region in the central part of the state.

The high level of development in the state includes the districts of Aurangabad, Gaya, Nawada and Singhbhum West. The districts of Aurangabad, Gaya and Nawada form a small region in the central part of the state. The distributional pattern of very high and high level of development in 1990-91 do not show any difference from the year 1980-81. In fact, the very high and high level of development for both the time periods are similar.

Medium Level of Development

The districts having medium level of development are mainly confined to north-western part of the state and form a large contiguous region including the districts of West Champaran, East Champaran, Muzaffarpur, Vaishali, Saran and Bhojpur. Apart from this the other two districts which fails to form any region are Munger and Singhbhum East. The districts of medium level of development exhibit scores ranging from very high to high on the dimension of agricultural mechanization and education and medium to very low on the dimensions of infrastructural development and industrialization; institutional development and agricultural intensity; and modernization and urbanization.
Low and Very Low Level of Development:

The low and very low level of development are found in the western, south-western, northern, north-eastern and eastern part of the state. The districts of low and very low level of development have strong association with the dimensions of institutional development and agricultural intensity; and infrastructural development and industrialization. The low scores on these dimensions of development contribute significantly to the low level of development of the state.

Relationship Between Agricultural Productivity and Regional Development in Bihar

An examination of Fig.27, Fig.28, Fig.29, Fig.30 reveals that agricultural productivity and levels of development, barring few exceptions do not coincide with each other i.e. high agricultural productivity do not have high level of development and vice versa.

Agriculture productivity and regional development for the year 1980-81 as shown in table 11 and depicted Fig.27 and Fig.29, it has been observed that the districts of West Champaran, East Champaran, Samastipur, Begusarai, Patna and Nalanda have very high agricultural productivity. Out of these six districts having very high agricultural productivity, Patna and Nalanda have very high level of development, West Champaran has medium level of development, East Champaran, Begusarai and Samastipur have low level of development. On the other hand the districts having very high level of development are Patna, Nalanda, Ranchi and Dhanbad. Out of these four districts of very high
development, Patna and Nalanda have very high agricultural productivity, Ranchi has medium agricultural productivity and Dhanbad has low agricultural productivity.

As regards high agricultural productivity there are six districts, having high agricultural productivity. They are the districts of Siwan, Purnia, Bhagalpur, Sitamarhi, Rohtas, and Nawada; out of these six districts only Nawada has high development, Siwan and Rohtas have low development and Sitamarhi, Purnia and Bhagalpur have very low level of development. On the other hand districts having high level of development are Gaya, Nawada and Singhbhum; out of these three districts Nawada has high agricultural productivity and Singhbhum and Gaya have low agricultural productivity.

The districts which have medium agricultural productivity are Saran, Vaishali, Darbhanga, Bhojpur, Muzaffarpur, Munger, Hazaribagh, Gopalganj, Ranchi and Santhal Pargana. Out of these ten districts, Ranchi has very high level of development; Saran, Vaishali and Muzaffarpur have medium level of development; Bhojpur, Hazaribagh and Darbhanga have low level of development and Munger, Santhal Pargana and Gopalganj have very low level of development. The districts which have medium level of development are West Champaran, Saran, Vaishali and Muzaffarpur. Out of these four districts having medium level of development, West Champaran has very high agricultural productivity; Saran, Vaishali and Muzaffarpur have medium agricultural productivity.

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### Table 11

**Agricultural Productivity and Regional Development**

(Composite under 1980-81)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Name of District Under Agricultural Productivity</th>
<th>No. of District Under Agricultural Productivity</th>
<th>Name of District Under Regional Development</th>
<th>No. of District Under Regional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>West Champaran, East Champaran</td>
<td>6</td>
<td>Patna, Nalanda,</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Samastipur, Begusarai, Patna, Nalanda</td>
<td></td>
<td>Dhanbad, Ranchi</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Siwan, Purnia, Bhagalpur,</td>
<td>6</td>
<td>Gaya, Nawada, Singhbhum</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sitamarhi, Rohtas, Nawada</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>Saran, Vaishali, Darbhanga</td>
<td>10</td>
<td>West Champaran, Saran,</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Bhojpur, Muzaffar, Munger, Hazaribagh, Santhal Pargana, Gopalganj, Ranchi</td>
<td>10</td>
<td>Vaishali Muzaffarpur</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Madhubani, Saharsa, Katihar, Gaya, Aurangabad, Sinhhbhum, Dhanbad</td>
<td>7</td>
<td>Siwan, Rohtas, Aurangabad, Hazaribah, Begusarai, Samastipur, Darbhanga, Bhojpur, East Champaran</td>
<td>9</td>
</tr>
<tr>
<td>Very Low</td>
<td>Palamu, Giridih</td>
<td>2</td>
<td>Sitamarhi, Madhubani, Saharsa, Purnia</td>
<td>11</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td>Bhagalpur, Santhal Pargana, Giridih, Palamu, Gopalganj, Katihar, Munger</td>
<td></td>
</tr>
</tbody>
</table>
The districts of Madhubani, Saharsa, Katihar, Aurangabad, Gaya, Singhbhum and Dhanbad have low Agricultural productivity. Out of these seven districts of low agricultural productivity Dhanbad has very high level of development; Gaya and Singhbhum have high level of development and Madhubani, Katihar and Saharsa have very low level of development. Contrary to this, the districts having low level of development are Siwan, Rohtas, Aurangabad, Hazaribagh, Begusarai, Samastipur, Darbhanga, Bhojpur and East Champaran. Out of these nine districts of low development, East Champaran, Samastipur and Begusarai have very high agricultural productivity; Siwan and Rohtas have high agricultural productivity; Bhojpur, Hazaribagh and Darbhanga have medium agricultural productivity, and Aurangabad has low agricultural productivity.

There are two districts having very low agricultural productivity. They are the districts of Palamu and Giridih. Both Palamu and Giridih have very low level of development. On the other hand there are eleven districts having very low level of development. They are the districts of Sitamarhi, Madhubani, Saharsa, Purnia, Bhagalpur, Santhal pargana, Giridih, Palamu, Gopalganj, Katihar and Munger. Out of these eleven districts, Purnia, Bhagalpur and Sitamarhi have high agricultural productivity; Munger Gopalganj and Santhal Pargana have medium agricultural productivity; Katihar, Saharsa and Madhubani have low agricultural productivity and Giridih and Palamu have very low agricultural productivity.
Again examination of Fig.28, Fig.30 and Table 12 reveals that high agricultural productivity are not associated with higher levels of development and vice versa. Agricultural productivity and regional development for the year 1990-91 as depicted in the Fig.28, and Fig.30, it has been observed that the districts having very high agricultural productivity are Siwan, Gopalganj, Nawada, West Champaran, Saran, Nalanda, Samastipur, Begusarai and East Champaran. Out of these nine districts Nalanda has very high development; Nawada has high level of development; West Champaran, East Champaran and Saran have medium level of development; Siwan, Gopalganj and Samastipur have low level of development and Begusarai has very low level of development. Whereas, the districts having very high level of development are Patna, Nalanda, Dhanbad and Ranchi. Out of these four districts Nalanda has very high agricultural productivity; Patna has high agricultural productivity; Ranchi has medium agricultural productivity and Dhanbad has low agricultural productivity.

For the year 1990-91 the districts having high agricultural productivity are Sitamarhi, Munger, Muzaffarpur, Rohtas, Darbhanga, Vaishali, Patna, Bhojpur and Katihar. Out of these nine districts Patna has very high level of development; Vaishali, Munger, Bhojpur and Muzaffarpur have medium level of development; Sitamarhi, Darbhanga Rohtas and Katihar have low level of development. On the other hand, districts having high level of development are Nawada, Singhbhum West, Aurangabad and Gaya. Out of these four districts Nawada has
Table 12

Agricultural Productivity and Regional Development in Bihar

(Composite Index 1990-91)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Name of District Under Agricultural Productivity</th>
<th>No. of District Under Agricultural Productivity</th>
<th>Name of District Under Regional Development</th>
<th>No. of District Under Regional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>Siwan, Gopalganj, Nawada, Saran, Nalanda, Samastipur, Begusarai, East Champaran</td>
<td>9</td>
<td>Patna, Nalanda, Dhanbad, Ranchi</td>
<td>4</td>
</tr>
<tr>
<td>High</td>
<td>Sitamarhi, Munger, Muzaffarpur, Rohtas, Darbhanga, Vaishali, Patna, Bhojpur, Katihar</td>
<td>9</td>
<td>Nawada, Singhbhum West, Aurangabad, Gaya</td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td>Madhubani, Saharsa, Araria, Kishanganj, Purnia, Khagaria, Bhagalpur, Sahibganj, Lohardagga, Aurangabad, Jehanabad, Gaya, Ranchi, Godda, Giridih</td>
<td>15</td>
<td>West Champaran, East Champaran Saran, Vaishali, Munger, Bhojpur, Muzaffarpur, Singhbhum East</td>
<td>8</td>
</tr>
<tr>
<td>Low</td>
<td>Hazaribagh, Dhanbad, Deoghar, Gumla</td>
<td>4</td>
<td>Siwan, Gopalganj, Sitamarhi, Saharsa, Katihar, Bhagalpur, Hazaribagh, Jehanabad, Samastipur, Rotas, Darbhanga, Purnia</td>
<td>12</td>
</tr>
<tr>
<td>Very Low</td>
<td>Palamu, Singhbhum West, Singhbhum East, Medhepura Dumka</td>
<td>5</td>
<td>Begusarai, Khagaria, Kishanganj, Godda, Medhepura, Sabhiganj, Dumka, DeogharGumla, Lohardaga, Palamu, Araria, Giridih, Madhubani</td>
<td>14</td>
</tr>
</tbody>
</table>
very high agricultural productivity; Aurangabad and Gaya have medium agricultural productivity and Singhbhum West has very low agricultural productivity.

As regards medium agricultural productivity there are fifteen districts which have medium agricultural productivity. They are Madhubani, Saharsa, Araria, Kishanganj, Purnia, Khagaria, Bhagalpur, Sahibganj, Lohardaga, Aurangabad, Jehanabad, Gaya, Ranchi, Godda and Giridih. Out of these fifteen districts Ranchi has very high level of development; Gaya and Aurangabad have high level of development; Saharsa, Purnia, Bhagalpur and Jehanabad have low level of development; and Khagaria, Sahibganj, Lohardaga, Giridih, Madhubani, Godda, Araria and Kishanganj have very low level of development. On the other hand districts having medium level of development are West Champaran, East Champaran, Saran, Vaishali, Munger, Bhojpur, Muzaffarpur and Singhbhum East. Out of these eight districts of medium level of development, West Champaran, East Champaran and Saran have very high agricultural productivity; Munger, Vaishali, Muzaffarpur, and Bhojpur have high agricultural productivity and Singhbhum East has very low agricultural productivity.

The districts of Hazaribagh, Dhanbad, Deoghar and Gumla have low agricultural productivity. Out of these four districts Dhanbad has very high level of development;
Hazaribagh has low level of development and Gumla and Deoghar have very low level of development. On the other hand, the districts having low level of development are Siwan, Gopalganj, Sitamarhi, Saharsa, Katihar, Bhagalpur, Hazaribagh, Jehanabad, Samastipur, Rohtas, Darbhanga and Purnia. Out of these twelve districts Gopalganj, Siwan and Samastipur have very high agricultural productivity; Sitamarhi, Katihar, Rohtas and Darbhanga have high agricultural productivity; Saharsa, Bhagalpur, Purnia and Jehanabad have medium agricultural productivity; and Hazaribagh has low agricultural productivity.

There are five districts having very low agricultural productivity. They are the districts of Palamu, Singhbhum West, Singhbhum East, Medhepura and Dumka. Out of these five districts, Singhbhum West has high level of development; Singhbhum East has medium level of development; and Palamu, Medhepura and Dumka have very low level of development.

In order to analyse the relationship between agricultural productivity and levels of development two scatter diagrams have been constructed as shown in Fig.31 and Fig.32 for the years 1980-81 and 1990-91 respectively. The X-axis of the scatter diagram represent agricultural productivity and Y-axis the levels of development. Vertical and horizontal lines demarcating the different levels of agricultural productivity and levels of development are drawn for the ease of analysis.
An examination of Fig.31 reveals that there are two districts having very low agricultural productivity and very low level of development. There are seven districts having low agricultural productivity. Out of these seven districts, three districts have very low level of development, one district has low level of development, two districts have high level of development and one district has very high level of development. With regards to the districts showing medium agricultural productivity, three districts have very low level of development, three districts have low level of development, three districts have medium level of development and one district has very high level of development. There are six districts showing high agricultural productivity. Out of six districts having high agricultural productivity, three districts have very low level of development; two districts have low level of development and one district has high level of development. Again there are six districts having very high agricultural productivity. Out of these six districts, three districts have low level of development, one districts has medium level of development and two districts have very high level of development.

Again an examination of Fig.32 reveals that in the year 1990-91 there are five districts having very low agricultural productivity, three districts have very low level of development, one district has medium level of development and one district has high level of development. There are only four districts having low agricultural productivity, among which two districts
BIHAR
SCATTER DIAGRAM: RELATIONSHIP BETWEEN AGRICULTURAL PRODUCTIVITY AND LEVELS OF DEVELOPMENT 1990-91

\[ r = 0.44 \]
\[ r^2 = 0.19 \]
- = SIGNIFICANT AT 0.01 LEVEL

Fig. 32
have very low level of development, one districts has low level of
development and one district has very high level of development. As
regards medium agricultural productivity there are fifteen districts. Out
of these fifteen districts having medium agricultural productivity eight
districts have very low level of development, four districts have low
level of development, two districts have high level of development
and one district has very high level of development. Nine districts
have high agricultural productivity, out of which four districts have
low level of development, four districts have medium level of
development and one district has very high level of development. Again
there are nine districts having very high agricultural productivity, one
district has very low level of development, three districts have low
level of development, three districts have medium level of development,
one districts has high level of development and one district has very
high level of development.

In general, it is observed that there is weak positive correlation
between agricultural productivity and levels of development on the
scatter diagrams. To ascertain this relationship product moment
correlation is workout. The coefficient of correlation (r) turns up as
low as 0.42 and 0.44 for the year 1980-81 and 1990-91 respectively.
This is significant at 99 percent level of confidence. To find the amount
of variance in the level of development explained by the agricultural
productivity, coefficient of determination ($r^2$) is computed which is
0.17 and 0.19 i.e. about 17 and 19 percent spatial variation in the
levels of development is due to variation in agricultural productivity

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for the year 1980-81 and 1990-91 respectively.

The findings of this analysis do not verify our hypothesis that the agricultural productivity in Bihar is a component of regional development. That is, higher levels of development are not associated with the higher levels of agricultural productivity and vice versa. The overwhelming importance of agriculture in Bihar's economy cannot be over emphasized but agricultural productivity in Bihar, the study area, appears to be less significant or weak factor of urbanization, industrialization, infrastructural an social development. In fact, agriculture do not provide the resource base for urbanization and modernization. The ever increasing population is exerting a great pressure on land and adversely affecting the man land ratio. As agriculture is of intensive subsistence type, farmers grows a large variety of crops and production is just sufficient to maintain their families, only a small surplus in marketed locally to buy agricultural implements and other necessary items for their domestic use.

The per hectare yield is comparatively low in Bihar. It is barely one third or one fourth of the yield of the agriculturally advance states of India. The low yield per hectare has a direct influence upon the health, efficiency and nutritional standard of rural inhabitants. The low yield per hectare in the study area is due to less and improper utilization of land and modern agricultural inputs.

The over all agricultural productivity of Bihar is generally low but in northern and central Bihar, where agriculture is the only
occupation of the majority of population, agricultural productivity is comparatively high as compared to southern Bihar. This is due to the high fertility of soil, better irrigation facilities and due to diffusion of modern inputs in some parts of northern and central Bihar. Inspite of high agricultural productivity the regional development in the area is very slow. This may be due to high growth of population which leads to the low investment in the agricultural sector. The extra production being consumed by extra population. Contrary to this, the southern Bihar plateau, which is the store house of large number of minerals, both mining and agriculture are the main occupation of the people. The agricultural productivity is generally low as compared to northern and central Bihar. The soil layer of southern Bihar is thin and lies over a rocky stratum and therefore it become burnt during dry season resulting in low productivity. Besides, the topography of southern Bihar plateau is not suitable for growing all types of crops which is important to support large population of the area. As the agricultural productivity is generally low in Southern Bihar it do not contribute to regional development of region.

It is generally found that the agricultural productivity as a measure of efficiency of agricultural system through various links has a strong bearing on the level of development, but in Bihar, the area under study, the agricultural productivity as a component of regional development has a weak or no bearing on the level of regional development.