

**MAPPING THE AGRICULTURAL GEOGRAPHY: A DISTRICT  
WISE PATTERN IN THE SOUTH-EASTERN PART OF THE  
PUNJAB PROVINCE IN COLONIAL INDIA**

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**ABSTRACT:**

The South-Eastern part of the Punjab was somewhat backward during 1858-1947. This sub-region was also located away from the perennial rivers Punjab and the river Jamuna's course was along the eastern boundary of the state. The non-perennial river Ghaggar, which passed through the northern parts of this area, caused considerable yearly damage to agriculture. Rainfall was low and erratic, and in the peak period, July to September, there were often early local and wide spread floods. The soil was sandy and light in texture. Irrigation through wells was extremely limited. The paper brought out some important points into light also. A district wise pattern in this region was varied and Karnal district was so fortunate in agricultural pursuits. Hisar and Gurgaon districts were remained backward; the cultivated area was not increased; the cropping pattern was based on low value food cum fodder crops; irrigation was limited and success rate of maturity of crops was rather low as compared to the remaining area of this sub-region. When compared to the other parts of the Punjab province; the picture was depressive. Therefore, agriculture in the south-east Punjab was erratic, lopsided, uneven, unpredictable, and had no definite pattern because of the physical features and British agrarian policy.

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## I

The south-eastern region<sup>1</sup> had poorer resources than most other parts of Punjab and this sub-region's agricultural geography was somewhat different from the other part of Punjab province too. This sub-region was also located away from the perennial rivers Punjab and the river Jamuna's course was along the eastern boundary of the state. The non-perennial river Ghaggar, which passed through the northern parts of this area, caused considerable yearly damage to agriculture. Small rivulets, mostly dry except during the monsoon, caused more damage. Rainfall was low and erratic, and in the peak period, July to September, there were often early local and wide spread floods. The soil was sandy and light in texture. Irrigation through wells was extremely limited. In most parts there was a paucity of sub-soil water; the level of which water was considered to be roughly about 25 feet.<sup>2</sup> In many cases the water was brackish.<sup>3</sup>

Therefore, in these circumstances, it would be very interesting to assess the agricultural geography of this area; in addition to, was it varied at the district level; how it impacted the physical landscapes of the area under reference and was there any change in regard to cultivated area, cropping pattern and irrigation system to some comparison with the other areas of the Punjab have also been discussed in this paper.

This south- eastern area (now called Haryana) was constituted as a separate state on 1st, November 1966, as a result of the bifurcation of the bilingual state of Punjab. It therefore, demands a separate study in order to understand the developments specific to the area both geographically and economically, and to recreate an 'economic history' of this tract. It is situated between 27°3' to 31° north latitude and 74°5' to 77°6' east longitude; and it is practically a level plain, 700 to 900 feet above the sea level, and with an area of 44212 square kilometers.<sup>4</sup> Uttar Pradesh bounds it on the east, Punjab on the west, Himachal Pradesh in the north and Rajasthan to the south. It has the Shivalik hills in the north and the river Yamuna in the east. The river Ghaggar provides a kind of boundary to the west of the state. The area is situated towards the depressions of the Indo-Gangetic region and the soil is formed almost entirely of alluvium. Standing on the watershed of the two rivers, Indus and Ganga, the region is a vast level plain. The entire state has alluvium of the old type, consisting of sand and clay, silt and hard calcareous concentrations, which are some times as big as nuts, known as "kankars".<sup>5</sup> Therefore, the sub-region under reference had four geographical features: 1. **Shivalik Hills:** altitude varying between 900 to 2300 meters. These hills are the source of the rivers like Saraswati, Ghaggar, Tangri and Markanda and

the districts of Yamunanagr Ambala and Panchkula. 2. **Ghaggar Yamuna Plain:** Divided in two parts - the higher one is called 'Bangar' and the lower 'Khadar'. This alluvium plain is made up of sand, clay, silt and hard calcareous balls like gravel known locally as kankar.3. **Semi-desert sandy plain:** This area includes the districts of Sirsa and parts of Hissar, Mahendergarh, Fatehbad, Bhiwani and shares border with Rajasthan.4. **Aravali hills:** This is a dry irregular hilly area.

South-East Punjab lies almost 300 miles north of the Tropic of Cancer, and its climate is of the extreme kind, with two main seasons- winter and summer. The temperature remains low in winter up to 2°C and the climax of the season is reached on May and June when the season is hot like a furnace with maximum temperature at Hissar, 50°C. About 80 percent of the overall rainfall in this area falls between July and September, the monsoon time.<sup>6</sup> Wind currents bring rainfall in south-east Punjab from the east and south-east. A proverb here says that 'East wind brings rain'. The winter rains, which fell around January, although some time insignificant in amount, affected vary materially the prospects of the spring harvest and cultivation in the south-eastern districts suffered periodically from insufficient rain.<sup>7</sup> The present paper is divided into six sections. First section discusses the overview of the agricultural geography of the South-Eastern Punjab. District wise geographical features are discussed in the second section. The third section deals with the changing cultivated area during colonial rule. The water resources and changing irrigated area of the sub-region are in the next section. The fifth section analyzed the cropping pattern. The last section is of conclusion.

## II

Ambala district lay on the north-eastern edge of this south-eastern tract, between 30° 02' 35" and 30° 55' 45" north latitude and 76° 32' 45" and 77° 36' 20" east longitude.<sup>8</sup> The river Yamuna in the east and the Saharanpur district of Uttar Pradesh bound it to the South-East. Prior to the independence of India, Ambala district had six tehsils, named Nalagarh, Ropar, Kharar, Ambala, Jagadhri, and Naraingarh.<sup>9</sup> The total population of the district was 8,65,300 by the Census of 1891, and was 8,48,000 in 1941,<sup>10</sup> and the total cultivated area was 7,25,000 acres in 1887, which increased to 7,35,107 acres in 1921-22.<sup>11</sup> The district was named after the town of Ambala said to have been founded during the fourteenth century by an 'Amba Rajput', from whom it derived its

name. Still another version is that the town has taken its name after the 'goddess' 'Bhawani Amba', whose temple still exists in the town.<sup>12</sup> The district is usually described as submontane, and the description is correct enough as regards the Ropar, Kharar, Naraingarh, and Jagadhri tehsils; which all adjoin the Shivalik range and include a considerable area of hilly country. The soil of these tehsils is generally speaking good alluvial loam, similar in character to, though not so rich as, the soil in the corresponding tehsils of the Hoshiarpur district across the Sutlej in the north. Non-perennial streams mainly drain the district.<sup>13</sup> The drainage system of the district comprises the Yamuna, and its tributaries, the Chaulang, Rakshi, Saraswati, the Markanda, Dangri and Ghaggar. There has been no problem of alkalinity or salinity in the district. The fluctuation in the frequency of annual rainfall during 1901-50 ranged from 500 mm–900 mm.<sup>14</sup>

Karnal district lay on the north-eastern edge of the south-eastern part of Punjab, between, 29° 09' 50" and 30° 15' 15" north latitude, and 76° 10' 10" and 77° 17' 05" east longitude.<sup>15</sup> Jind and Patiala bound the district on the east and Saharanpur, Muzaffarnagar and Meerut district, on the west.<sup>16</sup> The district was comprised of five tahsils, before partition namely, Karnal, Kaithal, Panipat, Thanesar, and Gula (Guhla).<sup>17</sup> It was an irregular area, rhombus, and covered an area of 3124 square miles in 1904-09. The cultivated area of Karnal was 6,52,998 acres in 1867-68,<sup>18</sup> which increased to 11,11,680 acres in 1922.<sup>19</sup> The population of Karnal was 8, 63,000, which increased to 9, 95,000.<sup>20</sup> The district is named after the town of Karnal, which according to legend, owes its foundation to Raja Karan, the mythical champion of the Kauravas in the epic war of 'Mahabharata'. The eastern side abuts on the River Jamna for the southern half of its length. Yamuna and Western Jumna canals provide irrigation. The soil is silt loam, loam, and light loam.<sup>21</sup> The average rainfall in Karnal, in the extreme north-eastern parganah, is about 28 inches.<sup>22</sup> The fluctuation of the frequency of annual rainfall during 1901-50 was between 201mm-700 mm.<sup>23</sup>

The district Hissar, lay on the western part of the south-eastern tract, between 28° 58' and 29° 49' north latitude and 75° 13' and 76° east longitude. Population of the district was 7,76,000 in 1891, which increased to 10,07,000 by 1941.<sup>24</sup> The cultivated area of Hissar was 13,50,319 in 1867-68,<sup>25</sup> which increased to 26,50,327 in 1922.<sup>26</sup> The district comprised five tehsils namely, Hissar, Bhawani, Tosham, Hansi and Sirsa. The district derives its name from its head quarters the town Hissar, founded by Firoj Shah Tughlak in the fourteenth century, He named it after himself as 'Hissar' Feroza', the fort of Firuz. It is predominantly an agricultural district. The

district of Hissar is part of the alluvial or Ghaggar-Yamuna plain and its southern and western portions mark a gradual transition to the Thar Desert.<sup>27</sup> The soils of this district are generally sandy-to-sandy loam in texture. In some areas, however, these are loamy and clay loam. On the basis of soil structure, the area is generally divided in three tracts; viz. Bagar, Haryana and Dadri.<sup>28</sup> The fluctuation in the frequency of rainfall was between 101-500 mm.<sup>29</sup>

The Rohtak district lay in the central part of the south-east Punjab, between north latitude 28° 19' and 29° 17' and east longitude 76° 17' and 77°. The district comprised four tahsils named Rohtak, Jhajjar, Sampla, and Gohana. The total population was 5,53,609 in 1881,<sup>30</sup> which increased to 9,56,000 in 1941.<sup>31</sup> It was situated on the confines of Rajputana, a beyond the southern boundary of the Punjab proper. The district length was 62 miles, and its breadth, in the center, 40 miles. Though, Rohtak possessed no grand scenery yet the canals with their belts of trees, the lines, and a few small rocky hills in the south-west, gave the district more diversified features than were met with in many of the plains tract of the Punjab. The center of the northern *parganah* and extending down to Delhi and Hissar high road, run a well marked broad depression called locally the '*nai nuddi*, (new river) and which was once, no doubt, an arm of river Jamna. The west of the Gohana tehsil was irrigated by the Butanah Canal, while the villages on the eastern border and in the north east of Sampla, received water by means of long courses dug from the Delhi branch.<sup>32</sup>

The Gurgaon district was situated in the extreme south-east corner of the Punjab province. The district lies between 27° 39' and 28° 32' north parallels of latitude and 76° 42' and 77° 33' east meridians of longitudes. The name of the district is believed to be a corruption of Guru Gram, i.e. village of spiritual leader. The traditional account is that Yudhishtra, the eldest of the Pandavas, gave his village to his Guru, Dharonacharya.<sup>33</sup> The district was comprised of tehsils, Rewari, Palwal, Nuh, Ferozpur and Gurgaon. It is of very irregular shape with a total area of 1946.87 square miles. The total population was 6, 88,310 in 1868, which decreased to 6,41,753 in 1891 (minus 7 percent) and increased to 7,46,208 in by 1901. Several spurs of the Aravali range traverse the district and the only tahsil, which has no hill, is Palwal. The general direction of the hills is from south- south-west to north- north-east and they exercise considerable influence on the agriculture of Gurgaon, Nuh and Ferozpur tehsils.<sup>34</sup> The district has all types of soil, right from clay to sand dunes. They are classified into heavy of hard clay (*chiknot*, *dakar* and *rohi*), clay loam (*narmot*), sandy loam (*magda*), and sandy (*Bhur*). The soil suffers from erosions by wind

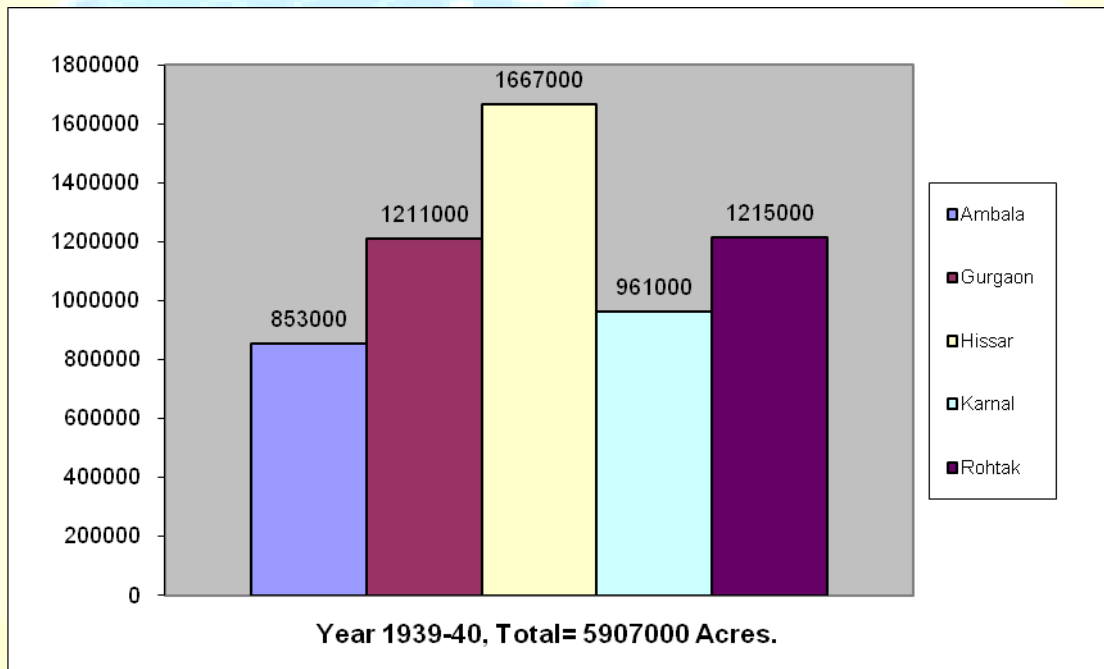
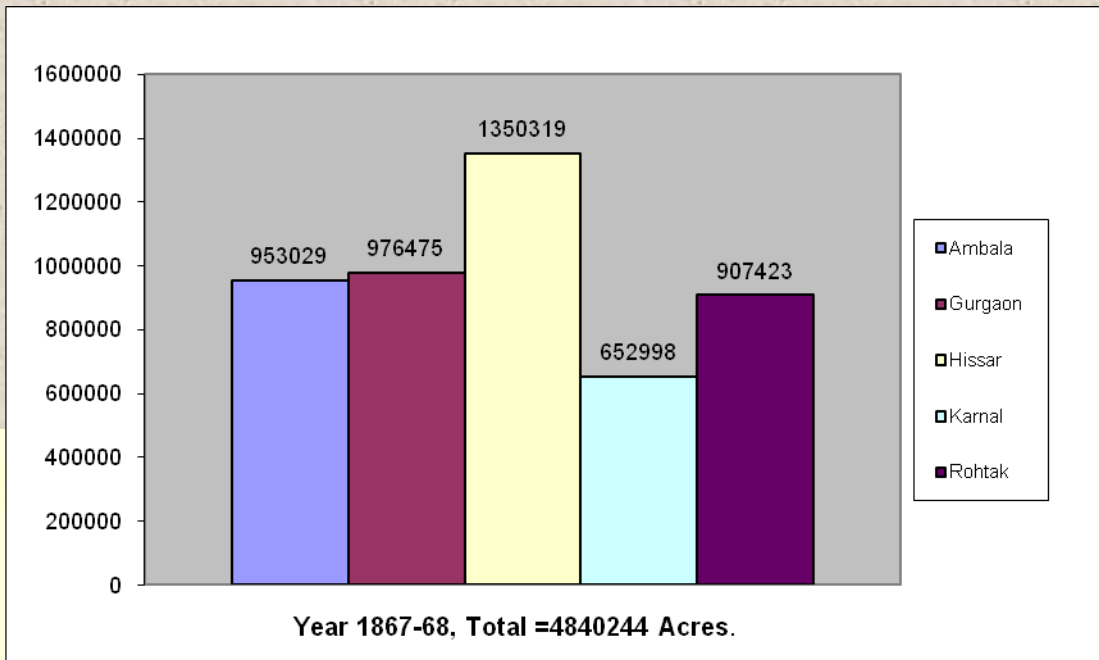
and its shifting nature makes the raising of crops very difficult. In general, the soils are deficient in nitrogen and organic matter, but the phosphatic content ranges from low to medium.<sup>35</sup> The rainfall is so uncertain that adherence to any fixed rotation of crops is impossible, and the crop to be sown is determined not so much by the preceding one as by the character of the season. The fluctuation of the annual rainfall was 101-500 mm.<sup>36</sup>

### III

The agriculture in the south-east Punjab was erratic, lopsided, uneven, unpredictable, and had no definite pattern because of the physical features and British agrarian policy. Agrarian policy towards the south eastern region of the Punjab province was significantly modified due to the lack of economical potential, low rain fall and agricultural 'backwardness'. The south eastern part was geographically distinct from the Punjab. This diverse situation accounted for the different agrarian experience of these parts. The British Government gave less priority to improvements in agriculture and its agrarian policy shifted from cultivation to animal husbandry. The total cultivated area in the south-eastern region of the Punjab fluctuated over time. From 48 lakh acres in 1867-68, it increased to 54 lakh acres by 1886-87; by the turn of the century it further increased to 65 lakh acres.<sup>37</sup> By the 1940s however, a contraction to 59 lakh acres is seen.<sup>38</sup> The cultivated area of the region under reference had increased by 11.8 percent in 1886-87, by 21.8 percent between 1887 and 1907, by 1.6 percent from 1907-22 but then decreased by 11.5 percent by 1940.<sup>39</sup> Therefore, the overall growth of the cultivated area was a moderate one of almost 23 percent between 1867 and 1940. In a review of the district wise position figures available in Land Revenue Reports of 1890 reveal that Hissar district was the most cultivated area with more than 40 percent area under cultivation. Gurgaon, Rohtak and Ambala had an around 15 percent cultivated lands and Karnal about 14 percent. The south-eastern districts group shows a low level of land under the plough even Hissar had more than 50 percent of uncultivated area. By 1940, the position of districts underwent a change showing both increase in the the case of Karnal, Rohtak and Gurgaon as well as decline Hissar in Hissar and Ambala. Increase in the cultivated area was minimal ranging 2 to 5 percent. Hissar on the other hand showed a decline of over 12 percent. The most cultivated area of the late nineteenth century that is Hissar, still however, maintained that position, despite loss of cultivated areas.

In the late nineteenth century and early twentieth century, we find an uneven picture of cultivated area. This position is also supported by information available for 1892-93 to 1926-27, where consistent shrinkage can be seen, except in Rohtak district, in, Ambala (31), Hissar (8), Gurgaon (6) and Karnal (3). Rohtak was the only district where 12 percent cultivated area increased.<sup>40</sup> When compared to the other parts of the Punjab province, the patterns of changes in the cultivated areas in the south-eastern parts seem rather unique. It neither follows the pattern of western districts of the region nor does it completely follow the pattern of central district. However, the south-eastern districts show some similarity with the central area. The maximum increase of south-east area was the half of the minimum area of western Punjab. The area of the western Punjab (Shahpur, Jhang, Montgomery and Multan exhibited an exceptional growth in cultivated areas between 1894 and 1927, ranged from 24 percent to 135 percent.<sup>41</sup> There is however, some similar trend with the central districts where a small overall decline is visible. The central Punjab districts with the exception of Lahore that had a decline, however, showed a minor decline in cultivated areas. This decrease ranged from 2 to 9 percent in Ferozpur, Hoshiarpur, Amritsar, Jullundur and Ludhiana, while it was 16 percent in Lahore.<sup>42</sup> It is evident that is conducive to agricultural growth to this sub-region. The south-eastern tract does not exhibit the growth pattern of the western Punjab.

#### **District Wise Pattern Changing in Cultivated Area, 1867-68 and 1939-40.**





## IV

The agricultural geography of the south-eastern region included the different kind of water resources like canals, wells, ponds and tanks. The land of this region was largely dependent upon the natural factor of irrigation i.e. rainfall. This is amply reflected in local adages, and folk songs on the theme of rain, in this area:<sup>43</sup>

‘Jab Chamke Pachcham Uttar Ke or, Jab Jano Pani Ka Jor’.

(Such as the lightning flashes in the north-western direction and a partridge feather shaped cloud indicates the certainty of down pour),

and;

‘Sad do Sawan nit, Bahadon Char or Asaj Ek’.

(Two falls of rain in ‘sarh’, daily falls in ‘sawan’, four in ‘Bhadon’, and one in ‘Asoj’ constitute the ideal rainfall of the summers).

The inadequate degree of water was no security against drought and famine in the south-east Punjab, and rain was scanty and did not assure an increased yield, as brought out in folk songs; a young girl had to cherish a desire with expectation from clouds:

‘Upra Babilra Upra kyon ja’,

Barse Te kyon na Mahare desh’.

(Oh clouds! why are you going from our area and why are you not raining in our region).<sup>44</sup>

The rainfall however, in this region, was low and erratic and moreover, it varied area to area and time-to-time as well.

**Table:1 Average Rainfall in Major Rain Gauge Station of South-East Punjab between 1883 and 1901-04.**

Sr. No.	Rain Gauge Station	Rainfall in Inches in 1883-84	Rainfall in Inches in 1901-04
1	Ambala	32.3	32
2	Bhiwani	16.3	16
3	Fatehabad	15.7	15

4	Gohana	20.1	16
5	Gurgaon	26.5	23
6	Hansi	16.2	16
7	Hissar	16.3	16
8	Jagadhri	40	36
9	Kaithal	19.2	19
10	Karnal	28.4	28
11	Naraingarh	40.2	45
12	Nuh	24.4	23
13	Palwal	25.9	23
14	Panipat	24.7	24
15	Pipli	25.8	25
16	Rewari	22.1	18
17	Rohtak	18.8	15
18	Sampla	20.8	16

The table is based on, *Punjab District Gazetteers*, Vol. VII B, *Ambala District and Kalsia State, Statistical Tables*, 1912, Gula Singh and Sons, Lahore, 1913, IV; *PAR*, 1901-02, 111; *DG Gurgaon*, 1910-A, 17; *DG Rohtak*, 1910-A, 21; *DG Ambala*, 1904-B, Table IV; *DG Karnal*, 1904-B, Table N; *DG Hissar*, 1904-B, Table III.

The table on rainfall shows that Naraingarh (40) had the maximum rainfall in the tract 1883-84, as well as in 1901-04, whereas Fatehabad (15) had the lowest. Rainfall was higher in the sub-mountainous station like Naraingarh and Jagadhri than the plain area; in all the districts as a whole, we find the Ambala had the maximum whereas the Rohtak the minimum rain. We have comparative figures of the Punjab regions of 1888-89. The south-eastern region had 24 percent an average of all five districts, as compare to around 30 percent in central Punjab and only 15 percent in rest of the Punjab.<sup>45</sup> More than eighty percent of the annual rainfall received was during the rainy months of July, August and September. More importantly, rainfall over most of the region was unreliable.<sup>46</sup> The importance of sufficient and timely rainfall could be well

imagined. When the rainfall was sufficient, the land produced most luxuriant crops and sometimes most astounding ones.<sup>47</sup> Therefore, the productivity of land hovered around the rainfall.

A district wise review of the available sources of irrigation tells us that in Ambala District irrigation was possible through the Yamuna and Saraswati rivers; Western Jumna Canal, Ghaggar, Markanda, Rakhshi and Chautang streams, wells and tanks. Karnal district had Yamuna and Saraswati rivers; Rakshi and Chautang streams; wells, tanks; charsa and Persian wheels and Western Jumna Canal.<sup>48</sup> The main sources of irrigation in Rohtak district were only *Western Jumna Canal*, and wells with Persian wheels. In Hissar, there was the Western Jumna Canal, Sirhind and Ghaggar canal, and wells. Gurgaon district had the Yamuna River as well as the *Agra Canal*; Sahibi, Indori, Dohan, and Kasawati streams; wells and embankments.

On the other hand the Government started the Canalization and Colonization in other areas of the Punjab especially in Western Punjab, consequently, a tremendous increase in the cultivated area took place in canal colonies, which experienced there by the great expansion in agricultural production unequalled in any part of South-Asia even the world.<sup>49</sup> Mufakharul Islam, Himadri Bnerjee and Imran Ali considered the canalization as an example is neither in India nor in South-Asia. M L Darling also remarked: "The irrigation colonies in fact, opened an era of prosperity undreamt of the past."<sup>50</sup> The colonial State exploited the latent potential of the Punjab by initiated several irrigation schemes to meet the economic requirements. The State's main concern was the water taxes through *abiana*. In the Punjab 30 percent the total revenue came from irrigation as compared to 23 percent from India as a whole.<sup>51</sup>

V

The disparity was also seen in the cropping pattern too. With the passage of time, the central and western Punjab districts seemed to be consistent on cultivation of major crops like rice, wheat and commercial crops, because their agricultural resources were better than south-eastern tract, consequently, bajra and jawar decreased in many districts.<sup>52</sup> After the construction of the canal network the canal colonies too started producing greater quantities of wheat, and subsequently cotton crops, while gram cultivation became important in the central Punjab, the relatively arid

south-eastern region also grew gram and millets, but wheat was dominant in area of other than south-eastern region.<sup>53</sup>

Wheat and gram were cultivated in all areas except the Ambala district. Rice in Ambala and Karnal only, whereas barley was grown in Ambala, Gurgaon and Karnal; *bajra* in Hissar and Gurgaon; mung in Hissar only; maize in Ambala and cotton in Rohtak district only. In 1890s, wheat was grown largely in Ambala and Karnal where it accounted for about 20 percent of cultivation. Gram was largely produced in all districts except in Gurgaon, the area under gram in Karnal, Hissar, Amabala and Rohtak had 23, 15, 11, and 11, percent respectively. Bajra was the main crop in Rohtak, Hissar and Gurgaon where it covered 28, 9, and 28, percent area respectively. Barley was grown in the districts of Ambala, Gurgaon and Karnal with 5, 17, and 5, percent area respectively. It is obvious that in the 1890s the south-eastern districts exhibit a wide disparity in the cropping pattern. By the 1940s, the cropping pattern in the districts had changed. The cultivation of wheat increased in all districts except in Hissar by 8-16 percent.<sup>54</sup> For example, Ambala, Gurgaon, Karnal and Rohtak had 10, 7, 11, and 16, percent respectively. *Bazra* cultivation increased in Gurgaon, Hissar and Rohtak with 16, 68, 6, percent; Gram increased in Ambala and Gurgaon with 11, 9, but declined in Hissar, Karnal and Rohtak at, 3, 7, 1, percent respectively. *Jowar* cultivation decreased, in all districts namely Gurgaon Hissar, Karnal and Rohtak, almost 5, 3, 7, 29, percent respectively. Barley was less cultivated in Ambala and Karnal, but increased slightly in Gurgaon. Rice cultivation increased in Ambala by 4 percent but declined in Karnal by about 4 percent. The acreage under mung declined in Hissar while cotton cultivation marginally increased in Rohtak. The cultivation of maize increased in Ambala district.<sup>55</sup>

The crops failure was also the regular feature of the agricultural geography of the region under reference. The position of the districts also fluctuated during this period. It neither constantly increased nor decreased, and was marred by failure of crops natural calamities and the disease of crops was one of the reasons behind the failure of crops.<sup>56</sup> The crop has been continuously failing in the south-eastern area, but in the rest of the Punjab, this problem was 'less' evident.<sup>57</sup> The maximum crop failure was in the Hissar district (71 percent) followed by Rohtak, Gurgaon with 43-48 percent crop failure. In the Karnal district the impact was only 20 percent. It is obvious that in the south-eastern areas, the crop failure was around 40 percent where in the Jullunder Division, the crop fail was ranged from 4 to 14 percent only. The marginal crop failure

was noticed in the Amritsar (4 percent), whereas 14 percent crop was recorded in Jullunder district.

## VI

Thus, the agricultural geography of the sub-region under reference had its own specific features, which in no way to be considered equal to the other area of the Punjab province. The agricultural geography was also varied at the district level too. The Karnal and Ambala enjoyed the ample rainfall; the cultivated area was increased more as compared to other district of the sub region; we found some cash crops like sugarcane and rice in these districts; the crop failure was also less evident in both of the districts. Thus, the Colonial State development was more confined to these districts. The Colonial State also restrained the physical features of this sub-region which suited to animal husbandry. That is why the area was evident to produce food-cum-fodder crops only. Commercialization of agriculture was less 'evident' to this area as compared to the other area. Canalization and Colonization was started in Western area only. The State did nothing for irrigation for this area only revival of old Canals like Western Jamuna Canal, Agra and Ghaggar Canals.

<sup>1</sup> The modern day Haryana. There were mainly five districts namely Ambala, Karnal, Hisar, Rohtak and Gurgaon in this sub region.

<sup>2</sup> India Office Records: P/7841/1908, p.22, See, Report of the Deputy Commissioner of Rohtak District, 22 Sep. 1906 cited in Prem Chowdhry, 'Advantages of Backwardness' p.264.

<sup>3</sup> *Karnal District Handbook*, 1961, p.18

<sup>4</sup> D.C Verma, *Haryana*, National Book Trust, New Delhi, 1973, p.12.

<sup>5</sup> S.C. Bhatt (ed.), *The Encyclopaedic District Gazetteers, North Zone*, Vol. III, Gyan House, New Delhi, 1997, p.53.

<sup>6</sup> Tajinder Kaur, *Famines in the South – East Punjab, 1901-47*, M.Phil. Dissertation, Panjab University, Chandigarh, 1987, p.9, 10.

<sup>7</sup> Baden Powell, *Land Systems of British India*, Vol. III, Oxford, 1894, pp.205-06.

<sup>8</sup> *Haryana District Gazetteer, Ambala*, Controller Printing, Chandigarh, 1984, p.1.

- <sup>9</sup> S.C.Bhatt (ed), *The Encyclopaedic District Gazetteers of India, North Zone*, Vol. III, Gyan House, New Delhi, 1997, p.68.
- <sup>10</sup> *Census of India, 1941, Vol. VI, Punjab, 1942*, pp. 8-11.
- <sup>11</sup> *Punjab District Gazetteers, Vol. VII, Part A, Ambala District, 1923-24*, Superintendent Printing Lahore, 1925, pp. 82, 95.
- <sup>12</sup> *Gazetteer of Haryana, Ambala*, 1984, p.1.
- <sup>13</sup> *Punjab District Gazetteers, Vol. VII, Part A, Ambala District, 1923-24*, Superintendent Printing Lahore, 1925, pp. 2, 3.
- <sup>14</sup> *Haryana District Gazetteers, Ambala*, Controller Printing, Chandigarh, 1984, pp. 4, 386.
- <sup>15</sup> *Haryana District Gazetteers, Karnal*, 1976, p.1.
- <sup>16</sup> *Ibid.*,p.1.
- <sup>17</sup> *Haryana District Gazetteers, Karnal*, 1976, p. 4.
- <sup>18</sup> *General Report on Administration of the Punjab, for the year of ending 30<sup>th</sup> June, 1913*, Superintendent Government Printing, Punjab, Lahore, 1915,p.176.
- <sup>19</sup> *Report of Land Revenue Administration of the Punjab for the Agricultural Year ending the 30<sup>th</sup> Sep. 1922*, Superintendent Government Printing, Punjab, 1923, Statement No., II, pp. I,II.
- <sup>20</sup> *Census of India, 1941,Vol. VI, Punjab, 1942*, pp. 8-11.
- <sup>21</sup> *Reports of Revenue and Rates of Karnal District*, n---p. 1878, p.77.
- <sup>22</sup> *Ibid.*, p.77.
- <sup>23</sup> *Haryana District Gazetteers, Karnal*, Controller Printing, Chandigarh, 1987, p.1-4.
- <sup>24</sup> *Census of India, 1941, Vol. VI, Punjab, 1942*, p. 8-11.
- <sup>25</sup> *General Report on Administration of the Punjab, for the Year of Ending 30<sup>th</sup> June, 1913*, Superintendent Government Printing, Punjab, Lahore, 1915, p.176.
- <sup>26</sup> *Report of Land Revenue Administration of the Punjab for the Agricultural Year ending the 30<sup>th</sup> Sep. 1922*, Superintendent Government Printing, Punjab, 1923, Statement No., I,II, III.
- <sup>27</sup> *Haryana District Gazetteer, Hissar*, Controller Printing Chandigarh 1976, p.140
- <sup>28</sup> Tajinder Kaur, *Famines in the South-East Punjab, 1901-47*, Unpublished Dissertation of M. Phil., Department of History, Panjab University, Chandigarh, 1988, pp. 8-9.
- <sup>29</sup> *Haryana District Gazetteers, Hissar*, p.276.
- <sup>30</sup> *Gazetteer of Rohtak District, 1883-84*, Punjab Printing Press, Lahore, 1884,pp.1,2,7.
- <sup>31</sup> *Census of India, 1941,Vol. VI, Punjab, 1942*, pp. 8-11.
- <sup>32</sup> *Gazetteer of Rohtak District, 1883-84*, Panjab Printing Press, Lahore, 1884, pp. 1,2,7.

<sup>33</sup> *Haryana District Gazetteers, Gurgaon*, Controller Printing, Chandigarh, 1976, 34, and see *Gurgaon District Gazetteer*, n—p, 1910, p.1. In whose memory a tank still exists on the west Side of the road to the railway station.

<sup>34</sup> *Final Report of the Third Regular Settlement, 1903-09, of the Gurgaon District*, n---p, 1910, pp.1,10,11,13.

<sup>35</sup> *Haryana District Gazetteers, Gurgaon*, Controller Printing, Chandigarh, 1976, 34, and also see the source of footnotes of 49.

<sup>36</sup> *Ibid.*, p.768.

<sup>37</sup> Mahender Singh, 'Shifting Trends in Agriculture: Cultivated Area and Cropping Pattern in the South-East Punjab, 1858-1947,' *Punjab History Conference Proceedings*, Patiala, 2004, 359; (Cited hereafter, Shifting Trends in Agriculture; Cultivated Area and Cropping Pattern in the South-East Punjab).

<sup>38</sup> The exact figures were 4840244 acres in 1867-68, in 1886-87, 5414974 acres and in 1906-07, 6564889 and in 1939-40, these were 5907000 acres. Statistics taken from, *General Report on the Administration of the Punjab Territories, for the years 1864-65, 67, 68*, Punjab Printing, Lahore, 1869, XX-XXI; and K.C.Yadav, *Haryana: Itihas Evam Sanskriti*, 1313-14; and *Report on the Land Revenue Administration of the Punjab, for the Agricultural Year, 1<sup>st</sup> October 1908 to 30<sup>th</sup> September 1909*, Civil and Military Gazette, Lahore, 1910, Statistics, I, II, III, and *Report of the Land Revenue Administration of the Punjab for the year Ending the 30<sup>th</sup> September 1922*, Superintendent Government Printing, Punjab, 1923, Statement No. II, III, and *Punjab Agriculture Facts and Figures*, Publication No. II, Controller Printing Press, Chandigarh, 1957, 90-120.

<sup>39</sup> For some detail see, Mahender Singh, 'Shifting Trends in Agriculture: Cultivated Area and Cropping Pattern in the South-East Punjab, 1858-1947,' *Punjab History Conference Proceedings*, Patiala, 2004, 357-70; and also see, Mahender Singh, *Agriculture in the South-East Punjab, 1858-1947*, M. Phil Dissertation, P.U. Chandigarh, 2002, 64-66.

<sup>40</sup> *Calculated from the Report on the Land Revenue Administration of the Punjab for the Agricultural year ending 1<sup>st</sup> October 1894 to 30<sup>th</sup> September 1895*, Civil and Military Gazette, Lahore, 1896, XXV-XXX and also the same *Report of the year ending 30<sup>th</sup> Sept. 1927*, Superintendent Government Printing Press, Punjab, 1928, XXVII.

<sup>41</sup> *Ibid.*

<sup>42</sup> *Ibid.*

<sup>43</sup> Mahender Singh, 'Irrigation in the South-East Punjab, 1858-1947', Cited in *Punjab History Conference Proceedings, 37<sup>th</sup> Session*, Patiala, 2005, p.284; and D.C. Verma, *Haryana*, NBT, New Delhi, 2001, p.185.

<sup>44</sup> Sadhu Ram Sarda (ed.), *Haryana Ke Lok Geet*, controller Printing Press, Chandigarh, 1970, p. 290.

<sup>45</sup> Sukhwant Singh, *Agricultural Growth under Colonial Constraints, the Punjab, 1849-1947*, Manpreet, Delhi, 2000, pp.22-24.

<sup>46</sup> *Season and Crops Report, Punjab*, Lahore, 1905-06, Statement No-I, 11.

<sup>47</sup> *S R Rohtak District, 1873-74*, p. 87.

<sup>48</sup> These were dominant in Karnal district as compare to other districts of south-east Punjab in 1886-87.

<sup>49</sup> Ali Imran, *Punjab under Imperialism, 1885-1947*, OUP, Delhi, 1988, 9-10.

<sup>50</sup> M.L Darling, *Wisdom and Waste in the Punjab Villages*, 1934, 3.

<sup>51</sup> For detail see, Paul Paustian, *Canal Irrigation in the Punjab*, 128.

<sup>52</sup> Settlement Report of Gujranwala also remarked that the area under wheat increased 5820861 acres in 1873 to 8485990 acres in 1901 while, the area under *bazra* and *jawar* decreased 2490078 and 2002252 acres in 1873 respectively to 1347076 and 851196 acres in 1901 respectively.

<sup>53</sup>

Table: 2

**Change in the area under wheat crop for the different regions from 1901 to 1945.**

Regions	Year 1901-1905	Year 1930-1935	Year 1940-1945
Central Punjab	23.12	30.40	25.57
Eastern Punjab	11.14	6.29	4.91
Hilly areas	2.62	2.62	2.18
North-East Punjab	15.37	13.55	10.81
Northern Punjab	12.27	11.94	9.77
Western Punjab	12.84	14.97	14.9
Canal Colonies	21.08	31.83	28.18

This disparity in the cultivation clearly underlines the dominant place of canal colonies export earnings.

<sup>54</sup> It was the only district, where wheat declined almost 10 percent during 1890-91 to 1939-40.

<sup>55</sup> Mahender Singh, 'Shifting Trends in Agriculture: Cultivated Area and Cropping Pattern in the South-East Punjab, 1858-1947'. *PHC Proceedings*, Publication Bueau, Patiala, 2005, 357.

<sup>56</sup> See for detail, appendix-E

<sup>57</sup> *Calculated from, Punjab Agriculture facts and Figures, Publication No. II*, Controller Printing Press, Chandigarh, 1957, 100-150.