



Analysis the Agricultural production of Rabi and Kharif crops Karnal District Haryana

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Abstract:

Agriculture is the lifeline of Indian economy. It is still contributing about 16.5percent to Gross Domestic Product of the economy. India is pre-dominantly agriculture based country with nearly three-fourth of its population living in rural areas. Indian agriculture is a gamble of monsoon. There are various fluctuations in agricultural production. The basic causes are irregularity in monsoons, recurring droughts and floods which result in sudden rise and fall in the total output .India's agriculture was backward and qualitatively traditional by nature at the time of independence. Since independence, India has made substantial progress in the agricultural sector in terms of growth in output, yields and area under many crops. After the independence, Indian government has been adopting many strategies for the development of agriculture areas. In this area first achievement got when wheat and rice production increased three to four times during mid-1960s. Reason behind that was the increasing productivity by the used of modern technology and in puts. Indian production and productivity has been increasing since Green revolution with increasing use of synthetics fertilizers, high yielding seeds, expand of irrigation facilities , power and electricity in farm operations. The agriculture production and productivity are directly connected with the advance technology adoption. At that time India was the largest producer of fruits, cashew, nuts, coconuts and milk in the world, the second largest producer of wheat, vegetables, sugar and fish and third producer of rice and tobacco. A stronger growth in agriculture would lead to higher income for farmers, generate more employment opportunities and sharply reduce poverty.

Introduction:

Agriculture sector is a helping hand for the growth engine of the Indian economy as well as for Haryana state C economy. At the time of formation of Haryana state, the state economy was predominately rural and agriculture based but now has started the process of moving to an industrial and service economy. The share of agriculture and allied sector in state GDP decreased from 60.7% in 1969-70 to 21.3% in 2006-07 while the share of industries sector increased from 17.6% in 1969-70 to 32.1% in 2006-07 and share of service sector increased from 21.7% to 46.6% during this time period. By 2020, the share of agriculture in total GDP of the country is likely to be decreased to 15% due to faster development of non-agriculture sectors. Composition of state gross domestic products shows that the share of agriculture and

allied sector is gradually decreasing, whereas, the share of service sector is continuously increasing. The income of the farmers has been increasing rapidly due to major crops in Haryana. During the last some Indecades, there has been considerable increase in productivity of various agriculture commodities in Haryana. Haryana is contributing tremendously to India's food security. Food production can be sustained only if the progress in development input is assured and natural resource base including water and soil is conserved. The large amount of food that can be produced and highest growth rate strongly depends upon inputs such as irrigation, fertilizers and pesticides. So, higher growth rate in Haryana was largely brought about by increased use of fertilizers, irrigation and pesticides of high productivity varieties in production. I have selected Haryana state because of prosperous and rich resources endowments. Haryana state provides more than 2/3rd livelihood of the rural areas.

Study area:

Karnal district occupies 5th position in population size during 2011. In terms of density Karnal ranks at 12th position with a density of 597. Whereas during 2001 the density was 506. The general Sex Ratio of the district which was 865 in 2001 has increased to 887 in 2011. The district stands at 7th place amongst the 21 districts of the State. In terms of Child Sex Ratio (0-6 year's age group) the district stands at 14th place with a Child Sex Ratio of 824. In 2001 the district Child Sex Ratio was 809. The proportion of Child Population (0-6 years) is 13.06 per cent in Karnal district. The percentage of Scheduled Caste Population to Total Population in the district is 22.6 per cent and it ranks at 7th position whereas during 2001 it was 21 per cent. In terms of literacy Karnal stands at 14th place. The literacy rate in 2011 is 74.7 per cent whereas it was 67.7 per cent during 2001 Census. The literacy rate amongst Male population which was 76.3 per cent during 2001 has increased to 81.8 per cent and in urban area it is 87.1 per cent. The literacy rate has also shown an increase amongst female population. During 2001 it was 58 per cent and it reached 66.8 per cent during 2011. The Work Participation Rate (WPR) of Karnal district is 34.3 percent in comparison to 35.2 per cent of the State. The Work Participation Rate of Males in Karnal is 51.6 per cent, whereas the Female work Participation Rate is 14.8 per cent. The percentage of Cultivators to Total Workers in 2011 in the district is 21.8 per cent whereas during 2001 it was 26.6 per cent. The percentage of Agricultural labourers to Total Workers in 2011 in the district is 25.9 per cent whereas during 2001 it was 23.7 per cent. The percentage of Household Industry Workers to Total Workers in Karnal district is 3 per cent in comparison to 2.9 per cent of Haryana. The percentage of other Workers to Total Workers in the district is 49.4 per cent in comparison to 52.1 per cent of Haryana.

(i) Physical Features:

Location and size:

Karnal district lies between 29° 25' 10" N and 29° 59' 00" N latitude and between 76° 26' 21" E and 77° 12' 48" E longitude. Karnal district is quadrilateral-shaped, located in the Eastern half of Haryana State. To its north lie Kurukshetra and Yamunanagar districts, Panipat and Jind districts in the south, Kaithal district to its west and Eastern boundary is made by the Yamuna river and on the other side is the State of Uttar Pradesh. The district possesses geographical area of 2520.00* sq.km out of which 2451.05 sq. kms. is rural and 68.95 sq. kms. is urban.

Physiography:

The district is a plain area, which slopes from northeast to southwest. The Plain is a flat and within it, there is a narrow low lying flood plain area known as khadar of the Yamuna river. The Upland of Karnal district is known as Bhangar containing old alluvium. Yamuna is perennial river, which makes eastern boundary of the district. The district has a good network of canals. Topographically, the district can be sub-divided into three parts viz. Karnal Plain; Karnal Bhangar and Yamuna Khadar. Karnal Plain extends over western part of the district.

The area is a level land having a gentle slope towards southwest. The old alluvium of Nardak is available which has low fertility as compared to Bhangar alluvium on account of Kankar formation in the former case. Karnal Bhangar covers the major portion of the district lying between Karnal Plain and Yamuna Khadar covering the district in north-south direction. Soil of the region is loam (Bhangar) which is compact and stiff. Scrubs and bush vegetation is found in the region. The region is agriculturally rich. Yamuna Khadar extends over eastern parts of the district along the Yamuna river. Its slope is towards south in which direction the Yamuna river flows. The region is built and drained by Yamuna river so it contains various interlocking channels of streams, ponds and swamps as its characteristic features. The flood plain is low-lying and slightly undulating in topography.

Drainage:

The district is bordered on the east by the Yamuna river. Water table is higher in Khadar area along the Yamuna river. Hence well/tubewell irrigation is easier. In the western parts of the district to the west of Western Yamuna Canal (Main Branch) an intricate canal system has been developed from this canal to irrigate the Bhangar area of the district. General slope of the district is from north to south. In western parts it is from northeast to southwest. Seasonal rivers/nadis/rills emanating from Siwalik hills flowing in rainy season through Ambala and Yamunanagar districts flood the low lying areas of Kurukshetra district

and northwestern parts of this district. To channelise these flood waters various drains and link canals have been developed to use these waters for irrigation in the bhangar and nardak area. The Yamuna receives drainage from a narrow zone on its western side. In between the Ghaggar and the Yamuna, there is a third but small stream the Chautang (inland) which runs independently and loses itself near Assandh in the district.

Climate:

The district has a sub-tropical continental monsoon climate where we find seasonal rhythm, hot summer, cool winter, unreliable rainfall and great variation in temperature. Rainfall distribution is relatively satisfactory in relation to the western parts of Haryana and it is mainly concentrated during the summer monsoon. Some rain is experienced during the winter season in association with passing western disturbances (cyclone) Air is generally dry during greater part of the year. Dust storms mostly occur during April to June. Sometimes dense fog occurs in winter season. Four seasons are observed in a year. Mid-March to end of June is summer season, followed by monsoonal rainy season from July to mid-September, after which a transition period of two months follows, then comes the cold season from mid-November to mid-March. With the start of cold season temperatures begin to decrease rapidly. January is the coldest month when mean daily maximum temperature is 19.9° C and mean daily minimum temperature is 7.1° C. Cold waves affect the region when minimum temperatures sometimes drop down to freezing point. With the onset of summer season temperatures begin to rise rapidly. May and June are the hottest months with mean daily maximum temperatures reaching 38.6° C. Hot westerly winds locally known as 'looh' begin to blow from the month of April. In May and June sometimes maximum temperatures may go above 43° C. With the onset of monsoon season, day temperatures drop appreciably whereas nights continue to be as hot as in summer. During rainy season, weather is unpleasant due to increased moisture in the air. After monsoon season day temperatures remain high but night temperatures go down rapidly. Rainfall records (2005-09) reveal that average annual rainfall in the district is 477.8 mm and about 72 per cent of the normal annual rainfall in the district is received during June to September, July and September being the rainiest months. Rainfall generally increases from southwest to north-east. In general, winds are low for most part of the year but they gain strength during the monsoon season in July and August. Cloudiness is also heavy during this season. Rest of the year skies are clear or lightly cloudy. Often skies are overcast with passage of western disturbances. Easterly or south-easterly winds blow during monsoon season but for the rest of year winds are westerly or north-westerly. Air is dry for most part of the year but humidity is very high during monsoon season. Highest incidence of

thunderstorms is in between April and September. Thunderstorms occur in winter months also in association with passing western disturbances. Dense fog occurs in the winter months of December and January. Resources in District

Forestry:

The district covers Indri, Karnal and Assandh forest ranges which come under Karnal Forest Division headed by the Deputy Conservator of Forests stationed at Karnal. The district falls in North Haryana Forest Circle with headquarters at Panchkula. Forest and forest's produce have a recognized place both in rural and urban economy of the district. Nurseries of different species are raised for afforestation and re-afforestation. Forest staff also attends to soil conservation works and anti-erosion measures. Forests supply the much needed wood for fuel, timber for building purposes and making of agricultural implements. Indiscriminate cutting of trees resulted in scarcity of fuel and timber requirements. Rail/Road strips and many a government waste lands called 'Birs' were brought under forests by planting Eucalyptus milk and milk products worth Rs. 491.05 lakhs and sold milk products worth Rs 504.23 lakhs. There were two milk chilling centres at Karnal/Panipat but no milk plant in these districts. Milk is procured through. Poultry bird number has increased tremendously in the decade (1997-2007) from 13.0 lakhs to 51.0 lakhs, almost four times growth, which forms 17.7 % of the total poultry birds in Haryana State. This proportion is the second highest, first being Panchkula district (19.9%). In the year 2009-10, there 15 affiliated and developed Gaushalas in the district to provide shelter and care to the useless, unclaimed and Unproductive stray cattle. There were 3 slaughter houses in 2009-10 where 2400 sheep, 3600 goats and 1500 pigs were slaughtered.

Fishery:

Fisheries are stocked in 750 hectares of area in Karnal district as compared to 15,290 hectares in the State during 2009-10. There was total receipt of Rs. 22.3 crores from fisheries in the district. Fisheries have got momentum during the past decade in the district. There are 21 fish seed farms located in Haryana State, out of which one seed farm is located in the district (Saidpur village) where breeding of fishes is carried out. In the district better quality seed is provided to gram panchayats by this seed farm. Fisheries in the State are being run by State govt. and fish development agencies. All rights of fishing in the waters of rivers, canals, dams, and drains lies with the State govt. Fishing by individuals and private agencies is strictly prohibited in these waters in the State. There is no fish market in the district. There are only three

fish markets in Haryana State. Special training and publicity programmes have been launched in the district for the development of fisheries.

Industry:

In the past only a few industries that also on a small scale engaged a small section of population. The district was mainly agrarian. Presently, all the 29 large and medium industrial units in the district are less than three decades old. Pottery, shoe making and leather goods were made in Karnal and surrounding areas. Karnal was famous for glass-blowing and the glass was used for mirror worked walls and also sewn into phulkaris. Tiles and flower pots were made in Sadar Bazar, Karnal. Except shoe-making, most of these industries decayed after partition as the skilled Muslim artisans migrated to Pakistan. Shoe-making is one of the oldest cottage industries carried on by Scheduled Caste Workers in rural as well as urban areas. Urban areas specialize in manufacture of shoes whereas rural units manufacture Juttis. Fine shoes manufactured by units at Karnal are sold in neighbouring districts/State and even exported to other countries. When Karnal was a cantonment, shoes from here were supplied to army regiments. 30 Small scale units were functioning permanently while 3,437 temporary units were set up in the district. There were about 250 units engaged in the manufacturing of agricultural implements and products of the district were exported to countries like U.S.A, Australia, New Zealand, Dubai, etc. 260 rice-shellors were also functioning in the district.

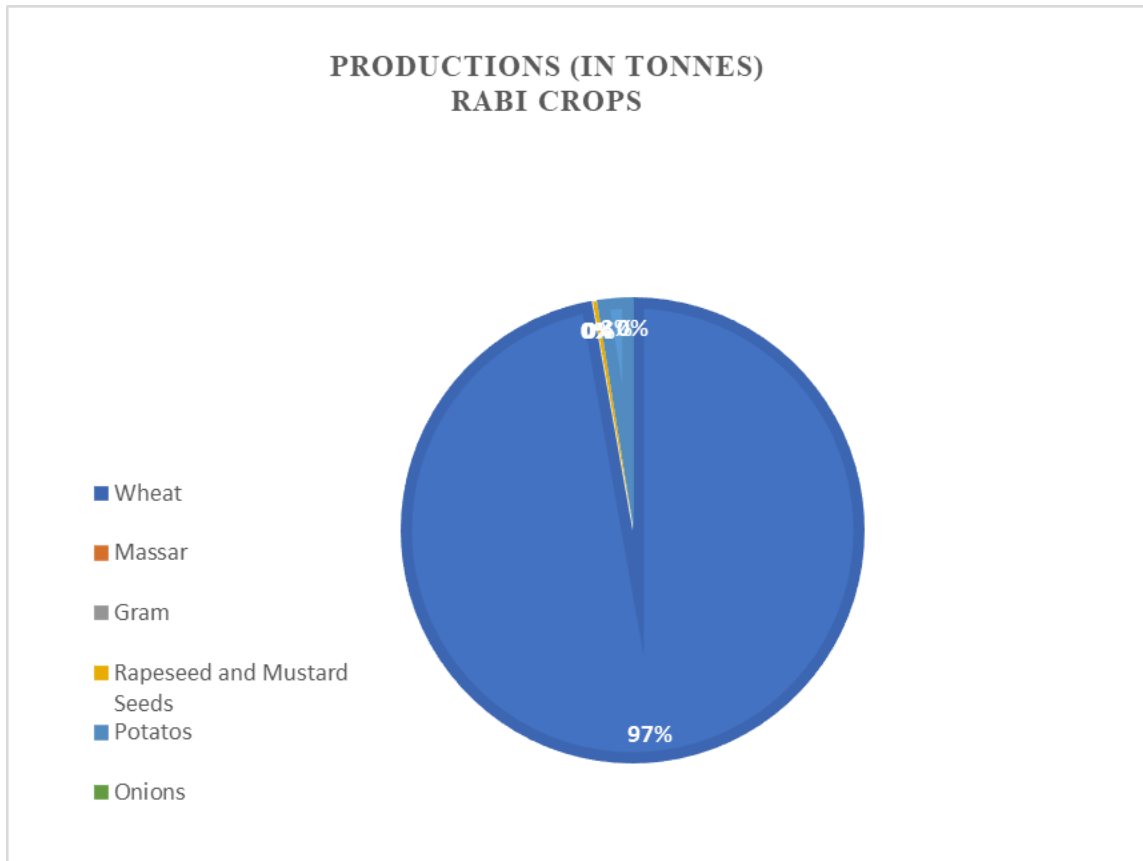
Crops production:

In Haryana State, as per Agricultural Census 2010-11, the marginal operational land holdings were 48.4 per cent i.e. below one hectare, small land holdings were 19.4 per cent (1 to 2 hectares) semi-medium land holdings were 17.2 per cent (2 to 4 hectares), medium lar holdings (4 to 10 hectares) were 12.1 per cent and the large holdings (10 to 20 hectare: 28 above) numbering 45,978 were 2.9 per cent as per data supplied by the Director La.. Records, Haryana the average size of the land holding is 2.21 in the State. In Haryana State, as per Agricultural Census 2010-11, the marginal operational land holdings were 48.4 per cent i.e. below one hectare, small land holdings were 19.4 per cent (1 to 2 hectares) semi-medium land holdings were 17.2 per cent (2 to 4 hectares), medium land holdings (4 to 10 hectares) were 12.1 per cent and the large holdings (10 to 20 hectares & above) numbering 45,978 were 2.9 per cent as per data supplied by the Director Land Records, Haryana. Average size of the land holding is 2.21. In Karnal district landholdings during 1995-96 numbered 95,454, out of these 27,785 land holdings were smaller than half-hectare size. 710 landholdings each measured more than 20 hectares size. Average size of

1	Paddy	169,100	465,000
2	Maize	600	1,200
3	Bajra	2,800	9,000
4	Mash	100	---
5	Other Pulses	600	800
6	Sugarcane	9,600	63,800
7	Chillies (dry)	100	100
8	Other vegetables	1,763	NA
9	Other Fresh Fruits	850	NA

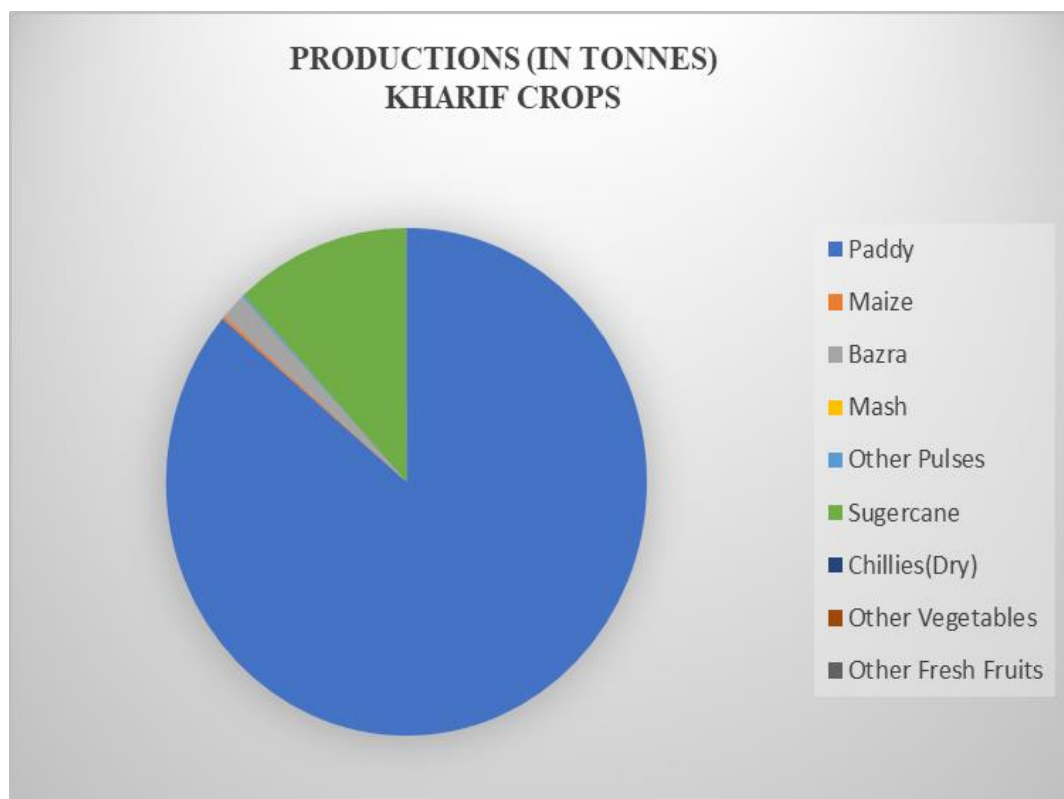
operational land holding in the district was 2.2 slightly better than the State average of 2.1 hectares. 18.6 percent (17,788) landholdings were of the size between half hectare and one hectare. With increase in size, number of landholdings decreased gradually. 1-2 hectare; 2-3 hectare; 3-4 hectare 4-5 hectare; 5-7.5 hectare size of landholdings contained 18.6; 11.0; 8.0; 4.8; and 4.7 percent respectively 7.5-10 and 10-20 hectares both categories jointly contained 4.4 percent of the total holdings. During 2010-11 agricultural census, average size of operational landholding in the district was 2.47 hectares slightly higher than that of 1995-96 (2.2 hectares). Proportion of marginal landholding (less than 1 hectares) was 46.7 percent, that of small sized landholdings (1-2 hectares) was 19.4 percent, semi -medium size landholdings (2-4 hectares) were 17.9 percent, medium sized landholdings (4-10) contribution was 12.5 per cent and that of large size landholdings (10 hectares & above) were merely 3.5 percent.

RABI CROPS -



KHARIF CROPS

SR.NO	Crops	Area Sown (In hectares)	Production (In tonnes)
1	Wheat	172000	791000
2	Massar	700	600
3	Gram	500	---
4	Rapeseed and Mustard seeds	1000	2,300
5	Potatos	1000	20,100
6	Onions	2	NA



Agriculture:

The district has a mixed type of economy, though dependence upon agriculture has lessened to some extent. 45.6 per cent of the main workers were engaged in agricultural activities in 2001 Census whereas this proportion has decreased to 44.8 per cent in 2011 Census. Role of tertiary activity is increasing slowly. Government is providing all help to increase agricultural production by distributing improved seeds, fertilizers and pesticides and also promoting latest techniques and mechanisation of agriculture.

Great fillip has been given to cultivation of sunflower cash crop. Other fields where Government is very keen to promote are animal husbandry, fisheries and forestry. In paddy production, it is called the rice bowl of Haryana. With paddy production of 4.7 lakh tonnes, it was top ranking district of the State during 2008-09 though the per hectare yield of paddy was 2,754 kg. per hectare yet it was having 75.7 per cent of the area under high yielding variety. Maize cultivation is practised only on 600 hectares with production of 1,200 tonnes. Similarly under pulses 600 hectares of area was put to use. Sugarcane was the chief cash crop of the district during 2008-09 when it was noted that area under this cash crop was 9,600 hectares and production was 63,800 tonnes. The district was ranking third in production among the districts of the State. In potato production also it was third ranking with a production of 20,100 tonnes. With yield per hectare of 20,945 kgs., area under potatoes was 1,000 hectares, under fresh fruits 850 hectares and under other vegetables 1,763 hectares. Among Rabi crops, wheat was the major cereal crop grown on an area of 1.7 lakh hectares and gave a production of 7.9 lakh tonnes. It was sixth ranking district in terms of production of this cereal crop. Oilseeds were grown on a small fraction of area i.e. 1,000 hectares (Rapeseed and mustard) and production was 2,300 tonnes Gram and massar pulses were grown on 1,200 hectares and gave a production of 600 tonnes. 14.0 per cent of the paddy area, 5.1 per cent of the maize area, 7.0 percent of the wheat area and 11.0 per cent of the sugarcane area of the State were in Karnal district whereas nominal areas like 0.4 per cent of bajra area 0.4 per cent of gram area and 0.2 per cent of rape seed and mustard seed areas of the State were in this district. Intensive use of agricultural machinery is observed in the district. 22,225 tractors, 15,029 combine harvestors, 53,428 tubewells and 108 sugarcane crushers were in use in the dist. during 2003. Apart from compost, cattle dung and green manures, chemical fertilizers are being used increasingly. During 2009-10 chemical fertilizers (NPK) were used to the tune of 120,658 tonnes in the district. Out of this 85,174 tonnes was Nitrogen (N), 29,331 tonnes Phosphatic (P) and 6,153 tonnes Potasic (K).

Irrigation:

Average annual rainfall in the district was 52.7cms. as per director, land records Haryana in 2009 whereas this figure was 88.5cms 74.3cms in 1990 and 995 respectively. Irrigation in the district is done both through tubewells and government canals. During 2009-10 there was 2.1 lakh hectares of cultivable area, out of which 1.97 lakh hectares of area was net sown and 90.78 per cent of the cultivable area was irrigated. 1.97 lakh hectares of area was irrigated out of which area irrigated by tube wells was 1.54 lakh hectares and the remaining 0.43 lakh hectares was irrigated through government canals. In the district, there were 40,347 total pumping sets out of which 40,154 were electric pumping sets and 193 were diesel

pumping sets. Sirsa Branch of the Western Yamuna Canal was opened in 1890. It takes off from the Western Yamuna Canal at Indri. It was not perennial because with receding flow in the Yamuna, the distributaries were run alternately. In 1954 Narwana Branch of Bhakra Main Line was excavated with its outfall into Sirsa Branch and made the Canals of the area perennial. Leaving Khadar area, irrigation in the Bhangar and Nardak area is through the intricate network of canals/distributaries/minors taken out from the Western Yamuna Canal. Main branches include Sirsa Branch, Habri Sub-branch, Chautang Canal, Rambha distributary, Rakshi distributary, Nardak Major distributary, Western Yamuna Canal (Hansi Branch and Delhi Branch), Bajida distributary and Narwana Branch (Karnal link) etc. Western part of the district is irrigated through this network of canals and distributaries. Fed by the torrents of the Rakshi and the Chautang streams, the Chautang canal system mainly consists of inundation canals. The Chautang Canals irrigate Karnal district through Rambha, Rakshi, Chautang, Saidpur, Sambhi, Gitalpur, Gholpur minors/distributories. Nardak distributary irrigates nardak tract of the district BudhaKhera and Karnal distributaries irrigate the area in the vicinity of Karnal town. Goli distributary irrigates a few villages in southern part of the district in Gharaundatahsil. Bajida distributary serves Karnal and Gharaundatahsils.

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