

Agriculture challenges of Bihar



“Bihar is located in the eastern part of India. The state is surrounded by Nepal in the north, West Bengal in the east, Uttar Pradesh in the west, and Jharkhand in the south. The state enjoys a unique location specific advantage because of its proximity to the vast markets of eastern and northern India, access to ports such as Kolkata and Haldia, and to raw material sources and mineral reserves from the neighboring states.

The Gross State Domestic Product (GSDP) of Bihar grew at a CAGR of 13.27% between 2015-16 and 2019-20. Bihar has witnessed strong growth in per capita net state domestic product. At current prices, per capita NSDP of the state grew at a CAGR of 13.41% (in Rs.) between 2016 and 2021.

Bihar is one of the strongest agricultural states. The percentage of population employed in agricultural production in Bihar is around 80%, which is much higher than the national average. It is the fourth largest producer of vegetables and the eight largest producers of fruits in India. Food processing, dairy, sugar, manufacturing, and healthcare are some of the fast-growing industries in the state. The state has planned initiatives for the development of other sectors such as education and tourism and also provides incentives for information technology and renewable energy.”

Bihar is considered destination for second Green Revolution in the country. Several reports including the National Farmers Commission have emphasized the need for accelerated development of agriculture in eastern India for securing food security of the country. Dr. A.P.J. Abdul Kalam, the then President of India has described Agriculture as Core Competence of Bihar.

In Bihar agriculture and allied sector contributes 18.9 percent of the GSDP. Farm holdings are small and scattered. There are about 1.61 crore farm holdings of which 91 percent is marginal. The water area of Bihar constitutes about 3.9 percent of the total geographical area. Bihar is a major fruit and vegetable growing state.

Agriculture is the mainstay of Bihar’s economy. According to the census of 2011, about 74% of the workforce in Bihar depend directly or indirectly on agriculture and allied activities for their subsistence. Around 88.7% of the population of Bihar resides in the rural areas therefore agriculture sector plays a vital role in the overall growth of the state’s economy.

In 2019-20, the contribution of the agricultural sector to Bihar’s Gross State Value Addition (GSVA) stands around 20% (18.7%). The agriculture of Bihar helps in generating employment opportunities, poverty alleviation, and improving livelihood. Due to the bifurcation

of Bihar in 2000, the bulk of mineral resources are currently in Jharkhand. Consequently, agriculture is the only sector that has maximum potential in Bihar.

Agro-climatic zones in Bihar

Based on the profile of soil, rainfall, temperature, and topography, there are four agro-climatic zones in Bihar. These agro-climatic zones are as following types-

- ✓ Zone-1 : North-West alluvial plain.
- ✓ Zone-2 : North-East alluvial plain.
- ✓ Zone-3 (a) : South-East alluvial plain.
- ✓ Zone-3 (b) : South-West alluvial plain.



Out of four agro-climatic zones of Bihar, the zone-1 & 2 are located on the north of Ganga river. On the other hand, zone-3 is entirely located in the south of Ganga. However, the floods in Bihar cause huge loss to the northern agro-climatic zone i.e. zone-1 & 2.

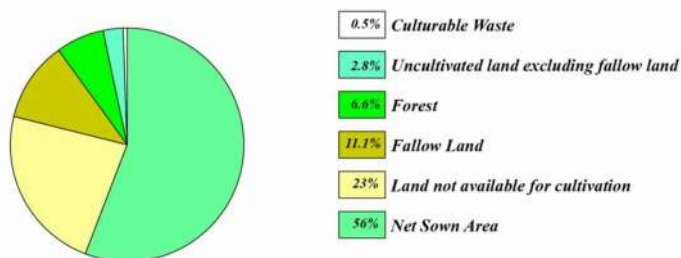
In terms of precipitation, zone-3 receives the lowest rainfall while the agro-climatic zone-1 and 2 receive moderate and high rainfall respectively. However, the rainfall during the monsoon is highest in zone-2 (1105.9mm).

Agro-climatic zone-1

Topographically, the zone-1 slopes towards the south-east direction, having alluvial plains with a very low gradient. The Saran, Vaishali and Samastipur situated in this zone are water-logged. The western portion of this zone is under the influence of the Adhwara System of rivers. For instance, Gandak, Burhi Gandak and Ghaghra. Geologically, this zone has calcareous nodules. The following are the six broad soil association groups of this zone.

- Sub-Himalayan and forest soil
- Recent alluvial Tarai soil
- Young Alluvial calcareous soil
- Young alluvial calcareous saline soil
- Young alluvial non-calcareous, non-saline soil
- Recent alluvial calcareous soil

Agro-climatic zone-2



The Land Utilization in Bihar (2017-18)

This agro-climatic zone is marked by alluvial plains formed by the sediments carried by the rivers namely Kosi, Ganga, Mahananda and its tributaries. Also, this region is marked by floods, caused by the Kosi river. Topographically, the general slope of the plains is toward the south-east.

Unlike agro-climatic zone-1, the soil of this zone is non-calcareous but rich in acidic minerals. The salinity and alkalinity are more in Saharsa, western parts of Purnia and Katihar district. The following are the three broad soil association groups of this zone.

Agro-climatic zone-3

The plains of this zone have alluvial and red & yellow soils formed by the river Ganga and those flowing from the south, having their origins in the Chhotanagpur plateau. This zone-3 is marked by backwater known as Tal lands extending from Buxar to Bhagalpur. Locally, the Tal lands are known as Diara lands. The following are the broad soil association groups in this zone.

- The recent alluvial calcareous soil.
- Tal land soil, light grey, dark grey medium to heavy textured soil.
- Old alluvial reddish yellow, yellowish-grey centenary soil.
- Old alluvial grey, greyish-yellow, heavy texture soil with cracking nature.
- The recent alluvial yellowish to reddish-yellow non-calcareous non-saline soils.
- Old alluvial yellowish to red-yellow soil of foothills.
- Old alluvial saline and saline-alkali soils.
- Land use pattern at the district level

The district such as Kaimur, Jamui, West Champaran, Gaya, Rohtas, and Nawada together accounted for a total of 5.06 lakh hectare of forest area, more than 80% of the total forest area in Bihar.

The agriculture of Bihar faces multifaceted challenges. The following are the major factors contributing to low productivity in Bihar.

Major challenges to the agriculture of Bihar

Uneven Monsoon: Although the water resources of Bihar are abundant and it receives 999mm of average rainfall. However, the variation in the onset of monsoon on year to year basis results in flood and the drought-like situation in Bihar simultaneously.

Wastage of water: The current method of flood irrigation in Bihar results in about 35% loss of water. About 60% of the water diverted or pumped for irrigation is wasted via runoff, evapotranspiration, percolation and seepage.

Technological factors: There are two agricultural universities, five agricultural colleges, one horticulture college, one agriculture engineering college, one dairy technology college and one veterinary college in the state. All the 38 districts have a functional Krishi Vigyan Kendra (KVK). ICAR has also a presence with eastern states regional headquarter at Patna. Besides, National Research Centre for Litchi and Makhana are established in state. However, State productivity remains low because of the slow adoption of modern technologies by the farmers. Dominance of cereals in cropping pattern reflect on the subsistence nature of state agriculture. Institutional extension system faces the challenge to take latest technologies to farmers field. Small size of lands. The size of landholding is very small in Bihar that compels the small cultivators to resort to the subsidiary occupation. More than 90% of all land-holding fall in the category of marginal holding with a farm size less than 1 hectare.

Declining investment in agriculture: Due to high risk and uncertainty in the agro-climatic zones, prices, productivity, etc, the financing in the farm sector become a problem. The slow pace implementation of Kisan Credit Cards leaves the small farmers to highly dependent on non-institutional credit sources. The moneylenders demand exorbitant interest rate and farmers get trapped in huge debt cycles.

Weeds: Weeds directly deplete the soil nutrients and moisture thus reducing the crop yield.

Seed related issues: Due to exorbitant prices of seeds, a majority of farmers, especially small and marginal farmers are deprived of good quality seeds. Due to the stable price of urea and increase the price of Potash and Phosphorous farmers use more urea than Potash and Phosphorous.

Inadequate marketing and processing: Due to inadequate food processing units and marketing facilities, farmers compel to sell their crops at low prices.

Floods and Droughts: Bihar experience both floods and droughts simultaneously. Click this to read a complete article on floods in Bihar.

Land Issues: More than 91 percent of all holdings fall in the category of marginal holdings with farm size less than 1 hectare. Each such holding is again fragmented in small parcels. Land

records are obsolete, making any institutional investment virtually impossible. Small farm agriculture creates serious problems for economy of scale.

Rainfed agriculture: State agriculture still heavily depends on monsoon. In the last 5 years, there has been drought or drought like situation in four consecutive years. Kharif crops are almost a gamble leaving little prospect for investments in costly inputs. Canal Irrigation is scanty. Irrigation is majorly (70%) dependent on diesel based tube wells. High cost of diesel based irrigation make it a very difficult input for even rabi crops.

Lack of Infrastructure: Road connectivity, storage godown and power availability to agriculture sector is inadequate to usher accelerated agriculture development in the state.

Lack of institutional credit: slow pace of implementation of kisan credit card leave large number of farmers dependent on high cost non institutional lending sources seriously impeding use of modern agri inputs and adoption of modern technology.

