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Cropping pattern in Bihar

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Abstract

Bihar has a total geographical area of 93.60 lakh hectares on which it houses a population of 82.9 million, thereby generating a population density of 880 persons per sq. km (Census 2001). Gross sown area in the State is 79.46 lakh hectares, while net sown area is 56.03 lakh hectares. There are around 1.04 crore landholdings in the State of which around 83 percent are marginal holdings of size less than 1 hectare (Table 1). With around 90 percent of the total population living in rural areas, agriculture as the primary feeder of rural economy continues to operate not only on margins of land but also on the margins of human enterprise, its productivity being among the lowest in the country. Without increasing returns to these margins, not much can be done realistically to develop the agricultural sector. Thus, agriculture continues to define both the potentialities and constraints to development in Bihar.

Keywords: cropping pattern, population, agricultural

Introduction

Bihar is one of the largest agricultural state. The net sown area in Bihar is about 60% of its geographical area. The proportion of total land put to agricultural use in the state is high in comparison to the other states of the country, as it falls in river plain of the Ganga basin. The land use pattern in Bihar from 2009-10 to 2013-14 remained same over the years. However there was an increase in the gross sown area from 7295.81 thousand hect. to 7580.14 thousand hect. in the midsts of 2009-10 and 2013-14. The cropping intensity increased marginally from 1.37 in 2009-10 to 1.44 in 2013-14. However agricultural productivity in the state declined substantially for its principle crops in the year 2012-13 & 2015-16 despite the launch of various schemes by the state government. The state gov has given top priority to agriculture and has prepared a road map for agriculture sector. This road map has an objectives of food and nutritional security of the masses, increase farmer's income, maximize employment to the peasants and stop migration accordingly.

In the view of technocrats, the cropping pattern is more essential to raise the productivity. Cropping pattern refers to the proportion of land under cultivation of different crops at different points of time. If a similar crop is grown on the same land the production factor of the land which can be used for crops will be accomplished. Thus the fertility of the land will decrease hence, to maintain the fertility it is essential to adopt cropping pattern in Bihar.

There are three types of cropping pattern 1) mixed cropping: growing two or more crops simultaneously on the same piece of land. 2) Inter-cropping: growing two or more crops in the same piece of land in a definite pattern. 3) Crop rotation.

The table under shows the cropping pattern in Bihar

Biannual	Biannual
1. Rice	1. wheat
2. wheat, Gram	2. maize, jwar
Groundnut, Jwar	3. wheat kapas
Kapas of Jwar	4. sugarcane, rice, jwar

Source: Unpublished thesis- 'Kosi Kshetra Mein Fasal Prarup'; 1996, page: 116

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Cropping pattern before independence

Bihar falls in basin of river Ganga. It brings with fertile alluvial soil, ground water resources every year. This is main cause of diversity in crops and makes the farming rich in the state. Rice, wheat and maize were the major cereal crop grown before independence.

Arhar, urad, moong, pea & khesari were some of the pulses grown in Bihar. In addition to above cereals and pulses, Bihar was the largest producer of vegetables like potato, onion, cauliflower etc. It was also the largest producer of fruits like mango, banana, lichi specially in north Bihar. Jute and sugarcane were two major cash crop in Bihar.

However in the middle of 1901-45 or before independence there had been no increase in agricultural land as the rate at which population increased. At that time the area of wheat production increased more than the area of jwar production in food grains. In non-food grains the area of oilseed, fiber, groves & sugarcane increased in between 1939-40 but it reduced gradually in 1943.

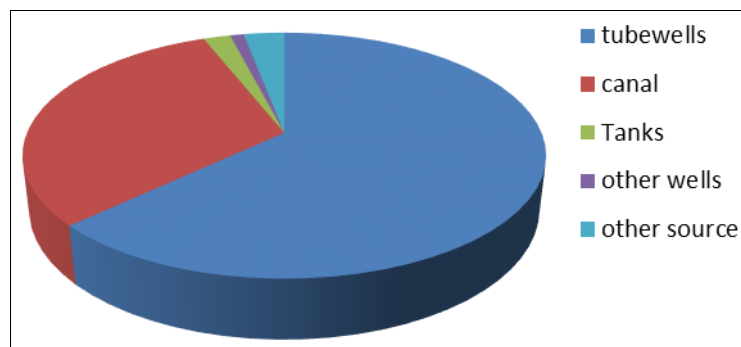
Cropping pattern after independence

After independence, total area of agriculture and food grains and non food grains also increased due to the movement of 'Grow more food' and emphasis upon the development of agriculture in five year plans. The net sown area is 60% of

its total geographical area. This percentage is much higher than the all India avg of 42%. Such a high percentage of cultivated land or the area sown is possible due to the following reasons.

- 1) Most of Bihar is plain area which is suitable for farming.
- 2) Most of the forest land has been converted into farm land.

Recently land under forest falls only 6% of the area. South Bihar is the most productive area of food and non food grains while north Bihar is cursed by flood and draught prone area. In the south ahar-pan system has been used to cultivate crops. But in north Bihar irrigation facilities are inadequate and improper. Only about 50% farm land are irrigated by proper irrigation facilities, out of which 63% are irrigated by state tubewells. Only 31% are irrigated by modern canal, tank, traditional wells and other local sources.



Irrigation facility in Bihar

Most of the canal and state tubewells are not in function. However rice is grown in almost all districts except some part of the state. Due to cropping pattern three different varieties of rice such as *Aghani Rice*, Summer rice and autumn rice are grown in three different periods of the year. The average production of rice is about five million tones every year. While wheat cultivation was restricted to western part of the state almost five decades back. But after green revolution farmers began cultivating wheat on a large scale. The average annual wheat production was around 4-5 million tones. Maize is also grown largely in the state with

the average annual production of around 1.5 million tones. the major producer districts in the state are *Khagaria, Saharsa and Madhepura*. Pulses such as moong, arhar, pea, gram and khesari are grown more southern parts and lesser in northern parts.

Bihar is one of the major producer of vegetables and fruits in the country. It is ranked 3rd in vegetables and 6th in fruits among other states of the country. Land holdings of Bihar has been divided into three agro-climatic zones. The table shows the various agro climatic zones, rainfall, temperature and other important cropping pattern.

Table 1: Agro-Climatic Zones in Bihar

Agro climatic Zones	Districts	Soil	Ph	Initiation/ Cessation of rainfall	Total Rainfall (mm)	Temperature (dg. Celcius)		Important Cropping Sequence
						Maximum	Minimum	
Zone-1 (North west alluvial plane zone - Pusa)	Saran, Siwan, Gopalganj, E.Champaran, W.Champaran, Sheohar, Sitamarhi, Madhubani, Darbhanga, Muzzafarpur, Vaishali, Samastipur, Begusarai	Sand y loam, loam	6.5 – 8.4	12 th June/ 30 th Sep to 10 th Oct	1040 – 1450 (1245.00)	36.6	7.7	Rice – Wheat, Rice-Rai, Rice, Sweet Poatato, Rice Maize (Rabi), Maize-Wheat, Maize-Sweet Potato, Maize- Rai, Rice-lentil
Zone-2 (North-East Alluvial Plane zone- Purnea)	Supaul, Khagaria, Saharsa, Madhepura, Purnea, Katihar, Kishanganj, Araria, Naugachia.	Sand y loam, Clay loam	6.5 – 7.8	7 th June/30 th Sep to 10 th Oct	1200 – 1700 (1450.00)	33.8	8.8	Jute-Rice, Jute- Wheat, Jute-Potato, Jute-Kalai, Jute-Mustard, Rice-Wheat-Moong, Rice-Toria
Zone 3		Sand y loam, Clay loam, loam,	6.8 – 8.0		990 – 1240 (1115.00)	37.1	7.8	Rice-Wheat, Rice-Gram, Rice- Lentil, Rice-Rai

		Clay					
Zone-3A (South Alluvial Plane Zone-Sabour)	Sheikhpura, Lakhisarai, Jamui, Banka, Munger and Bhagalpur			15 th June/30 th Sep to 10 th Oct			
Zone-3B (South Alluvial Plane Zone - Sabour)	Bhabhua, Rohtas, Aurangabad, Buxar, Bhojpur, Jehanabad, Gaya, Nalanda, Patna, Nawada			10 th June/ 30 th Sep to 10 th Oct			

The above table shows the rotation of crops in a year. It is observed from the table envisaged above that the agro-climatic zone 3 is lesser prone to crop rotation in the state. Zone 1 is more suitable for crop rotation or multiple croppings. Here it is also observed that the districts fall under zone 1 is affected by devastating flooding every year. However it follows the cropping pattern on purpose of raising the productivity of agriculture every year. Crops in Bihar is cultivated in all the three seasons:

- 1) Kharif - paddy, maize, pulses, oilseed
- 2) Ruby - wheat, maize, pulses, oilseed, potato
- 3) Garma - paddy, maize, groundnut, moong

Across all seasons some major crops cultivated in Bihar and there major producer districts in the state are as under-

Rice/Paddy

In Bihar there are more than 80 varieties of farm land area. In north-east Bihar three crops of rice are grown while in north-western Bihar two crops of rice are grown. In southern Bihar only one crop of rice are grown. In terms of production, major producer of rice in Bihar are Rohtas>Aurangabad>Kaimur. Major producers in terms of productivity (kg/Hec) are Rohtas>Arwal >Aurangabad.

Wheat

This is the second most cultivated crops in Bihar, it is cultivated on about 50% of all irrigated land area in Bihar. Major producer districts of Wheat are Rohtas>Arwal>Aurangabad. In terms of productivity (kg/hect) are Madhepura>Begusarai and Rohtas.

Maize

This is cultivated mainly in moist climate and rice cultivating reasons in Bihar. Major producers in terms of productivity are Purnea>Araria>Supaul.

Pulses

Pulses cultivated are mainly Arhar, Gram, Masoor, Moong and Khesari. In terms of production largest producers are Katihar>Purnia>Araria districts.

Purnia>Araria>Supaul are major producers in terms of productivity.

Oilseeds

Major producers in terms of production are Shahabad>West Champaran>East Champaran>Siwan>Muzaffarpur>Purnia.

Sugarcane

This is one of the most important commercial crops of Bihar. It provides raw materials to one of the largest industries i.e. sugarcane industries in Bihar. Sugarcane production stood at 182.97 lakh tones, however productivity

has fallen from 69.06 ton/hect in 2017-17 to 60.15 ton/hect in 2018-19. West Champaran alone accounts for about 58.3% of total production of the state. In terms of productivity Patna accounts for 84.77 tn/hect.

Jute

This is second most important commercial crop in Bihar after sugarcane. Jute is mostly cultivated in north-eastern districts of Bihar. The major producers are Katihar>Saharsa>Muzaffarpur.

Horticulture

In last two decade horticulture has emerged one of the most best agricultural enterprise in Bihar. It has two components i.e. fruits and vegetables.

The total production of fruits in Bihar stood at 42.29 lakh ton in 2018-19. It registered annual growth rate of 4-9%. Major fruits produced in Bihar are litchi, banana, mango, guava, pineapple etc.

Since the implementation of National Horticulture Mission (2005), vegetable production got major push which resulted annual growth rate of 7-52%. Important vegetables cultivated in Bihar are tomato, carrot, cucumber, radish finger, cabbage, potato, onion, Brinjal, Bottle guard, cauliflower etc.

During the last five years the annual growth rate of state agriculture GDP has been around 2.7% whereas state GDP recorded growth of 10.9% during the period which was higher than corresponding growth achieved at national level. But the growth has not been sustainable, mainly due to flood every year. A number of central sponsored projects have already been initiated in the state but they have not yielded the desired results. The strong monitoring system of agricultural projects, investment in irrigation and research, improving excess of peseatants and tenants and of course, increased generation and improved transmission of electricity are the prerequisites for higher and sustainable agricultural growth in the state. In the absence of these, desired rate of growth will remain illusive. Agriculture extention officials should also be trained for modern agricultural technology and package of practices.

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