

# Future Strategies of Agricultural Development of Bihar

Saroj Kumar Singh

S.N.S.R.K.S. College Saharsa (A Constituent Unit of B. N. Mandal University, Madhepura)  
E-mail: [drsaroj999@gmail.com](mailto:drsaroj999@gmail.com)

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**Abstract**—If proper thrust is placed on technologies, institutional direction, farm level support services, and all delivery mechanisms, improved farm infrastructure including rural connectivity, Bihar can definitely emerge as the 'Granary' for India. It can also provide the major hubs on fruits, vegetables, and fisheries for both national and global markets. The entire economic growth processes in Bihar depends on the dynamics of agriculture. There are successful experiments in different parts of the country, which if adopted, can provide an answer to various problems which Bihar is facing in its race to higher productivity. "In any scheme of planned economic development of the country, therefore, agricultural re-organization and land reform hold position of basic importance. Recently, on account of the growing need for food and raw materials, this importance has been brought home to all sections of the community. The success of the whole plan will vitally depend upon the results achieved in making the most advantageous use of land and labor resources engaged in agriculture. In this sense, the importance of agriculture is both basic and vital.

## 1. INTRODUCTION

Bihar is one of the most gifted states of the country in terms of its geographical location, its fertile soil, bountiful water resources, and a vibrant culture rich with history. In the post-independence period notwithstanding achievements in several fields, its position vis-à-vis other states has been deteriorating. The state is now counted as one amongst the most economically backward states in India. Lakhs of people from the state have migrated elsewhere, both within the country as well as abroad, in search of better avenues of education and livelihoods, many of whom have achieved eminence in various fields. The bifurcation of the state has also changed the parameters of development context in

Bihar, particularly in terms of resource endowments. As per details from Census 2011, Bihar has population of 10.41 Crores, an increase from figure of 8.30 Crore in 2001 census. Total population of Bihar as per 2011 census is 104,099,452 of which male and female are 54,278,157 and 49,821,295 respectively. In 2001,

total population was 82,998,509 in which males were 43,243,795 while females were 39,754,714. The total population growth in this decade was 25.42 percent while in previous decade it was 28.43 percent. The population of Bihar forms 8.60 percent of India in 2011. In 2001, the figure was 8.07 percent.

M Literacy rate in Bihar has seen upward trend and is 61.80 percent as per 2011 population census. Of that, male literacy stands at 71.20 percent while female literacy is at 46.40 percent. In 2001, literacy rate in Bihar stood at 47.00 percent of which male and female were 59.68 percent and 33.12 percent literate respectively. In actual numbers, total literates in Bihar stands at 52,504,553 of which males were 31,608,023 and females were 20,896,530. Total area of Bihar is 94,163 sq. km. Density of Bihar is 1,106 per sq km which is higher than national average 382 per sq km. In 2001, density of Bihar was 881 per sq km, while national average in 2001 was 324 per sq km. mSex Ratio in Bihar is 918 i.e. for each 1000 male, which is below national average of 940 as per census 2011. In 2001, the sex ratio of female was 921 per 1000 males in Bihar.\*Agriculture is the backbone of Bihar's economy, employing 81% of the workforce and generating nearly 42% of the State Domestic Product. The State with geographical area of about 94.2 thousand sq. km., has the natural endowment of fertile soil, good rainfall, plenty of water resources, and agro-climatic conditions suitable for growing three crops a year and almost all types of crops. According to 2011 Census the population of the state is 10.41 crores and growing at the rate of more than 2% per annum. It is therefore important to sustain self-sufficiency in food grain production with rate of growth of food grain production greater than population growth rate. Agriculture is not only the source of livelihood but also it generates raw material for the agro based industries, which has immense. \*

### 1.1.Objective And Methodology”

The purpose of the paper is as follow : i. To attempt at the identification of some major constraints to agricultural development in Bihar. ii. To put forward some policy - suggestions for developing agriculture in Bihar state. A descriptive methodology, based on secondary data derived from books of eminent authors, research published works. and from various sources is adopted for the purpose.

### 1.2.Limitations

It must be admitted that the shortage of time and paucity of data imposes serious limitation for which an in-depth analytical study could not be made. Constraints arising out of land system are national character. No attempt is, therefore, made to incorporate it within the preview of the study.

### 1.3. Identification of Some Major Constraints

Some major constraints to agricultural development in Bihar is identified and classified as follows: i. Physical Constraints: Size of Holding and Natural Calamities -ii. Infrastructural Constraints- Irrigation, Transport and Marketing.iii. Economic Constraints: Institutional (Tenancy) and Financial (Credit) iv. Other Constraints - Cultural Practices and Sociological.\*

### 1.4. Strategy of development

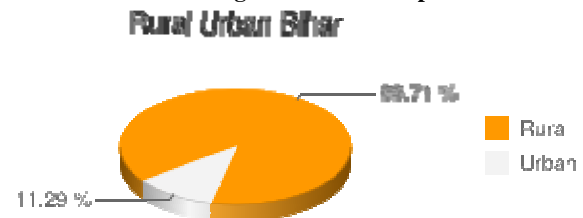
The following are the major planks of the strategy of development: i. Strengthening and revitalizing area development programs in the major irrigation commands for promoting optimum utilization of the irrigation potential available, introduction of multiple cropping, and high yielding varieties with related inputs. ii. Accelerating the progress of the Gandak project and other irrigation schemes which have already reached an advanced stage of executing for bringing in additional three million acres under irrigation effectively during the plan period. iii. Pushing ahead a massive ground water development and rural electrification programs so as to increase the area under lift irrigation substantially. iv. Enforcement of the land ceiling and other land reform measures.

### 1.5 Land Holdings in Bihar

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. Gross shown area in the state is 79.46 lakh hectares, while net shown area is 56.03 lakh hectares. There are around 1.04 crore land holdings in the state of which around 83 percent are marginal holdings of size less than 1 hectare as the Table shows. 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 this margin, 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.

Chart 2 Showing Rural Urban Population



### 1.6. Agro - Climatic Zones in Bihar

Agro climatic zone in Bihar could divide into three zones : North West, North East, South West, South East Zone. And rainfall and temperature are almost different from each other zone. Kharif 2006 started with a probability of a normal rainfall , the derivation for the first showers of the monsoon was (--48%) . But the monsoon was not favorable to the agriculture in that season. This seems to have adversely affected area under cultivation.

### 1.7. Land and Agricultural Reforms

The available data for landholdings demonstrate the extent of inequality in the agrarian structure. For example, more than 80 percent of operational holdings in Bihar are marginal (below one hectare), and they account for only 36 percent of total operational land area. At the other end, medium and large operational holdings of more than four hectares comprise less than 2.5 percent of all holdings, but constitute over 20 percent of operational land area. In Bihar, incidence of landlessness has increased in the decade of nineties from 9 percent to 10 percent of the rural households and the proportion of households in the marginal segment has also increased Significantly in the same time period. Apart from widening of disparity in land distribution, it can also be observed that while incidence of poverty has declined for all landowning classes during the twenties it has actually increased for the landless from 51 percent to 56 percent, strongly.

**Table 1. Category of Farmers**

Category of farmers	No. of Holdings	Operational Holdings
Marginal (0-1Hact.)	86,45,932 (82.9%)	27,87,789 (40.8%)
Small (1-2Hact.)	10,05,650 (9.6%)	13,00,667 (19.0%)
Semi-Medium (2-4 Hact.)	5,90,970 (5.7%)	15,82,279 (23.1%)
Midium (4--10Hact.)	1,78,295 (1.7%)	9,75,355 (14.3%)
Large (10--aboveHact.)	11,570 (0.1%)	1,93,760 (2.8%)
Total	1,04,32,417 (100%)	68, 39, 850 (100%)

### 1.8 Extension Services

In a sector which is based on enterprise of nearly 77 percent of total workforce on around 1.04 crore landholdings (92.5 percent of them being small and marginal holdings), importance of agricultural research to create/upgrade agricultural technology and extension of this technology and other support services to the farmers, cannot be overemphasized. In Bihar, there is a huge breach between the technology available in the agricultural universities/institutions and those on the field. Efforts have to be made to transfer the available technology to the farmers in the field. The public sector agricultural research and extension system consists of the Rajendra Agricultural University for agricultural research and education; seven research centers/ stations of the Indian Council of Agricultural Research for commodity and location-specific research; and various Departments of the State government that provide agricultural extension and regulatory services. The agricultural research and extension system has not been fully effective in developing and disseminating appropriate technologies to the farmers in the State. While 0.4 percent of agricultural GDP is spent on agricultural research and education at the national level, the average for Bihar is 0.2 percent. Further, 95 percent of this spending is used for salaries and 5 percent for establishment expenses, thereby leaving no funds for operational expenses needed to carry out relevant research. NSSO 2003 figures point out that the performance of the extension system in the State has been such that a mere 0.5 percent of farmers access information on modern technology from extension workers. Steps to reform the above situation have been in the recent years and, in particular, in the current year. The State government has universalized Agricultural Technology Management Agencies (ATMAs) to cover all districts of the State. The ATMAs are designed to decentralize decision-

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### 1.10 Horticulture

Bihar is one of the major producers of vegetables and fruits in India with 9.8 and 6.7 percent of national production respectively. It ranks third and sixth among other States in the production of vegetables and fruits respectively. Fruit area in the State is 2.91 lakh hectares which is around 7.8 percent of the total fruit area in the country. In general, yield rates of fruits and vegetables are lower in Bihar than those of other States. However they are among the highest for okra and litchis. The annual production of fresh fruits in Bihar is about 29.20 lakh MT. **“1.11.Crop Insurance”** Crop insurance policy was taken by 409,946 farmers in 2005-06, out of which 221985 took cover for kharif season and 187961 took cover for rabi season. The spread of insurance cover, however, is grossly inadequate keeping in mind that there are around 104 lakh landholdings in the State, nearly 93 percent of which are small and marginal holdings

which are specially required to be protected through the agriculture insurance plan. Its coverage would have to be significantly expanded over the years in order to stabilize income from agriculture and create conducive environment for productive investment in agriculture. \* “1.12. Strategic Agricultural Diversification” \*\*Traditional crop farming alone cannot provide adequate employment and income to agrowing rural population. Already the pressure of population on land is quite high. Therefore, the state should develop location specific plans for accelerated and diversified growth. Diversification could be for crop varieties as well as other produce. More areas could be brought under pulses, oilseeds, maize and diversification to horticulture, livestock and fisheries should find greater role. Horticultural diversification should cover fruits, vegetable, and mushroom, and flower, medicinal and aromatic plants. There is a scope for coconut, oil palm and cashew in the state. This would involve not only proper planning activities, but also the creation of necessary infrastructure, institution and policy support.

### **1.13. Fisheries and poultry**

The two most important areas having a high potential, need special attention. Districts with high productivity of gram and oilseeds call for urgent action to increase the area under these crops. Government can provide support either directly or indirectly through incentives to the private sector for supply of seed/planting material, marketing, processing, etc. This is one area which is most suitable for contract farming. The contract farming is now a well-accepted institutional arrangement to realize economies of scale, promote technology adoption, and supply of needed quality inputs.

### **1.14. Constraints and Challenges**

Development and Maintenance of Rural Infrastructure Rural connectivity in the key to raise farmers' productivity and income. Therefore, utmost priority should be given to improve infrastructure in various aspects. Aim should be to target the key constraints like poor water management, rural power supply, easy credit availability, and market access. Steps should also be taken to encourage renewable sources of energy. The State has highest potential for small hydropower projects, wind energy, bagasse based co-generation power from the existing and proposed sugar factory.

### **1.15. Conclusion Suggestions and Findings**

The broad analysis leads us to the conclusion that the cause for backwardness of agriculture is shown that effects of external factors are more than the internal factors. Our agricultural policy makers

seemed to be less aware of the peculiar problem that exists in Bihar state.

We are of the opinion that to accelerate the rate of growth of agriculture and to achieve rural development and rise in standard of living of the people the following measures invite attention.

### **1.16. To raise farmers' productivity and income**

Therefore, utmost priority should be given to improve infrastructure in various aspects. Aim should be to target the key constraints like poor water management, rural power supply, easy credit availability, and market access. Steps should also be taken to encourage renewable sources of energy. The State has highest potential for small hydropower projects, wind energy, bagasse based co-generation power from the existing and proposed sugar factories, *Jatropha* on waste lands, and rice husk.

### **1.17. Bottom Up Planning**

Making through 'bottom-up' planning procedures that would directly involve farmers and the private sector in planning and implementing extension programme at the block and district levels. Similarly, a decision has been taken in 2006 to universalize *Krishi Vigyan Kendras* to all districts of the State. In addition, 31 new seed testing laboratories have been sanctioned in the current financial year to give each district its own seed testing laboratory.

### **1.18. Imbalanced Use of Fertilizers**

A major reason for this imbalanced use of fertilizers is lack of knowledge among the farmers about the soil quality of their fields. In the current year, 16 soil-testing laboratories have been sanctioned, adding to the earlier strength of 23, thereby allowing for a complete coverage of all the districts. In fact, a mega-project with an outlay of Rs. 309 crore has been sanctioned in this year to establish soil testing laboratories in all the 534 blocks of the state over next 4 years.

### **1.19. Management of Seed Supply**

Management of seed supply is an important component of any programme of agricultural development. In the current year, Bihar State Seed Corporation has been revived and production of seeds is being undertaken by it on 45 state managed farms which remained inoperative for some years. More than 1100 agriculture graduates have been trained as agrilinic in the State. The utilization of technical expertise of these trained youths is necessary for agricultural

development. A decision was taken in the current year to use the seeds produced by agriclinic for public sector programme. In the current year, the KisanSammanYojna was also launched to identify and acknowledge enterprising farmers in the State and using them as extension agents. This plan is unique and innovative programme of extension reforms.

### 1.20. Minor Irrigation

More or less similar results on minor irrigation are also well documented by now. Studies of the Koshi command area point to the gross underutilization of land, since large areas are left fallow in the rabi season despite the availability of water. Indian economy is primarily agrarian. About seventy percent of its total population depends upon agriculture. Agriculture contributes about thirty seven percent the gross domestic New Agricultural Policy was made by the State government in 2006, to build upon the natural advantages that State has in agriculture. Its fertile land, huge water resources, and conducive climatic conditions imply tremendous potential to the agricultural sector. Despite this, productivity of crops in Bihar compare poorly with other states. Thus, at the core of the new agricultural policy for Bihar is the focus on increasing productivity of crops, not merely in comparison with the national average but in comparison with the best productivity standards achieved in any State in India. Following major initiatives have been taken by the State government in last one year: 1. Increase in farmer's income, Increase in crop productivity and Environmental conservation have been fixed as the four targets of new agricultural policy regime. 2. ATMA's have been constituted in 23 districts of the State which did not have its ATMA coverage under the centrally sponsored programme. Thus all the districts of the State now have ATMA coverage. 3. A megaproject for establishment of soil testing laboratories in all 534 blocks of the State has been sanctioned, to take soil testing facilities right to the door of the farmers. 4. 31 new seed testing laboratories are to be established in the State to give each district its own seed testing laboratory. 5. Chief Minister Horticulture Mission has been started in 19 districts of the State which were not covered under National Horticulture Mission, thereby universalizing the programme in the State. 6. Micro-nutrient testing laboratories have been established in 3 districts of the State. 7. Research and Educational infrastructure of Rajendra Agricultural University, which happens to be the only agricultural university of the State, has been strengthening. 8. Agricultural Produce Marketing Board has been abolished. 9. Bihar State Seed Corporation has been revived, and seed production has been started on 45 centers.

### Abbreviations

NSSO                      National Sample Survey

Organizations AMTA Agricultural Technology - Management Agencies KSY Krishi Samman Yojna RAU Rajendra Agricultural University.

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