

 <p>ISSN NO. 2320-5407</p>	<p>Journal Homepage: -www.journalijar.com</p> <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)</p> <p>Article DOI:10.21474/IJAR01/11827 DOI URL: http://dx.doi.org/10.21474/IJAR01/11827</p>	 <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR) ISSN 2320-5407</p> <p>Journal Homepage: http://www.journalijar.com Journal DOI:10.21474/IJAR01</p>
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RESEARCH ARTICLE

AGRICULTURE SCENARIO AND STRATEGIES FOR BIHAR'S DEVELOPMENT

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Manuscript Info

Manuscript History

Received: 05 August 2020

Final Accepted: 10 September 2020

Published: October 2020

Key words:-

Agriculture Road Map, Agriculture, Crop Production, Climate, Plains of Bihar

Abstract

Agriculture is at the core of Bihar's economy, employing 77 % of the work force and generating 35 % of the state domestic product. With 88 % of the state's poor living in rural areas, improving agricultural performance and related rural non-farm activity is critical for improving livelihoods and reducing poverty. Major crops grown in Bihar are rice, wheat, maize, gram, red gram, sugarcane, potato & other vegetables. However, the agricultural sector in Bihar is plagued with numerous, and well known, constraints and problems. Bihar's agricultural development in the latest 15 years between 2005-06 and 2019-20, presents a mixed picture. Agriculture growth was around 4.7 per cent, which was above the national average of 3.6 per cent and in the latest five years, its performance was even more commendable, with an average annual growth rate of 7.1 per cent. However, agriculture productivity of two of its major crops, rice and wheat, is lower than the national average, despite the relatively high private investment in yield augmenting inputs such as fertilizers, certified seeds, tube wells and farm machines.

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Introduction:-

Agriculture Road Map was started in 2008. The first agricultural road map concluded with a Krishi Karman Award to the state for ever highest rice production at 81 lakh MT in 2011-12. This also led to commendable progress in seed sector and agriculture extension. Now the second agricultural road map(2012-2022) is being implemented in the state. It includes programmes of not only the production related departments such as agriculture and animal, dairy and fishery resources department, but also the detailed programmes of Water Resources, Minor water resources, Energy, Land Reforms, Forestry and Environmental protection, Food Processing Industry, Cooperative, Rural Road and Flood and Drought related departments. The agriculture road map gives a holistic approach to agriculture developments and it needs to be implemented at the country level. The second agriculture road map of Bihar envisages an investment of Rs. 1.5 lakh crore in 5 years. Such large amount of investment in agriculture could only come through appropriate central scheme. However, the central scheme should provide adequate flexibility to states for choosing scheme components, its rate of assistance and mode of sanction and implementation. A Cabinet Sub Committee has also been constituted to monitor the preparation and implementation of the agriculture road map.

Strategy for improvement:

Qualitative increase in crop productivity may be emphasized as there is limited scope for increase in area. Current fallow and other fallow land may be brought under cultivation with appropriate interventions. Zaid season may be emphasized similar to Kharif and Rabi seasons. Crop and varietal diversification may be introduced. Quality of

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production and value addition has to be emphasized. The outreach of most modern crop production technology may be facilitated upto the last farmers. Region and Agro Climatic specific crop, variety and technology may be identified and promoted. While increasing crop production and productivity, soil, water, animal and human health may be conserved and protected.

Seed is critical for the development of agriculture. The public sector seed companies have become totally inadequate to cater to the needs of the farmer. The private seed business particularly through the multinational seed companies are making farmers entirely dependent on their avarice interest. There is a need to substantially increase investment in public sector seed production, processing and Marketing. Local seed companies may also be promoted to reduce the dependence on multinational seed companies. In addition to the crop seed planting material for horticultural crops are important. Similarly animal breeds and fish fingerlings are important for their productivity and quality. Whereas scientific innovations in seed industry would be helpful in achieving production targets but it would also be important to preserve and promote traditional varieties of crops and indigenous breeds of animals.

Sugarcane is the major cash crop in Bihar. In India Sugarcane is a major commercial crop for Sugar industries. In Bihar, it is grown in an area of 2.65 lakhs hectare with an average productivity of 69.72 ton per hectare and sugar recovery of 9.22 % against the national average of 68.8 t/ha and 10.17% respectively. Sugarcane Research Institute, Pusa (Bihar) is the only research institute committed to sugarcane research. It was established in 1936. A proposal to set up a new sugarcane research institute has been sent to ICAR which needs immediate attention. Climate change, declining soil health, emerging new disease and pest, labour scarcity and abiotic stresses are severely affecting cane productivity and sugar recovery. Sugarcane seed replacement rate is only about 10 % against the desired level of 33 %. Sugar sector needs a revival package.

Generation of appropriate agricultural technology and its dissemination to the farmers are becoming more and more challenging in the context of the climate change. Both the numbers and the quality of the technically qualified person in agriculture are grossly inadequate. There is a need to step up investment in agricultural research, education, extension. The whole ICAR system, agricultural universities and the state department of agriculture needs to be revisited for their current strength and weaknesses and every such institution should be strengthened to meet the future demand. New initiatives initiated by Bihar Agricultural University such as KisanChoupal, KisanGyanRath and direct video conferencing with farmers have proved immensely useful. Such experiences may be suitably replicated at the country level.

Agricultural planning is much dependent on the statistical input generated through age old system. It needs a relook with appropriate input from remotesensing technologies. Local and decentralized planning can only capture the unique situation and harness the local potential. Reliable information for village agriculture as unit should be promoted and public planning should be based on the village level data.

Agriculture marketing will be one area which need focussed attention. The basic infrastructure such as the dry and cold storage are grossly inadequate in states like Bihar. The state took a bold step to abolish APMC Act in 2006. However there are no alternative models in the country. Structural innovations to foster agriculture marketing should be developed.

Procurement of food grains must be assured and to make it effective FCI and CWC must create adequate storage infrastructure and FCI should make arrangements to procure food grains including Maize and pulses from the farmers.

Small farm agriculture is a compulsive situation and to make it viable is the highest challenge. Integrated farming may be a solution and it needs to be encouraged. Animal husbandry and fisheries are the key sectors besides crops and horticulture. There is a need to focus research on small animals such as rabbit, rat and reptiles to increase the food basket. The importance of small animals has duly been recognized by FAO and a national level perspective will further help the cause of food and nutritional security of the small and marginal farmers. Urban and peri urban agriculture offer new avenues and a perspective plan should be prepared to encourage urban agriculture.

High input cost particularly chemical fertilizers and pesticides would continue to pose challenge for the viability of small farm agriculture. Nutrient based subsidy regime for chemical fertilizers has led to skewed use of NPK fertilizers. Stable price of Urea and ever increasing price of P and K fertilizers are leading to excessive use of urea

and frugal use of P & K. There is an urgency to restore the optimum balance. Organic farming technologies may be promoted to utilize the locally available resources. Bihar has a robust vermi compost and bio fertilizer programme which needs to be replicated. Similarly green manure programme has been implemented with much success. Agriculture Road Map aims at reaching vermi compost, bio fertilizer and green manure in every plot in 5 years. Soil test based fertilizer application and soil health card to all eligible farmers be granted in the stipulated time.

Farm mechanization saves cost and improves quality. Bihar has unique experience in implementing a massive farm mechanization programme. Mechanization software has been developed for transparency and accountability. All transactions are on line and farmers are benefitting from it.

Use of modern Agricultural technology is important for increasing production and productivity. SRI, Zero tillage, high density plantation and other appropriate technologies are promoted under the agricultural road map. Such technologies should constantly be developed and promoted in the farmers field.

Eastern states particularly Bihar has large untapped irrigation potential. There should be national policy to help states to harness the irrigation potential and any investment on this count should be supported through a national programme.

Flood and drought have become recurrent feature in Bihar. Paradoxically, north Bihar is ravaged by flood and south Bihar by drought in same year. Similarly wild animals such as blue bull are proving a threat to agriculture. In such an unstable situation farmers are hardly able to make an investment and therefore agriculture largely remains traditional and subsistence. There is an urgent need to have a comprehensive policy to mitigate risk of contingent situations in agriculture.

The challenges of climate change are becoming more and more apparent. This would pose greater challenges for agriculture. To mitigate the adverse impact we need to explore more and more crops and animals in the food basket. There is a dangerous trend of shrinking food basket limited to few crops and varieties. Bio diversity within the species and among the species must be restored. Diversification among enterprises and diversification of varieties will have an important role to play in the coming times. Urban and peri urban agriculture would continue to draw attention and subtle planning would be required to foster it.

Quality control of the agri inputs would continue to be important. Therefore a strong network of analytical lab of soil, seed fertilizers pesticide, residue analysis would be very important.

Crop production Strategy:

Inputs: Production, availability at farmers' accessible places, timeliness, cost and quality.

Minimizing cost and maximising return: Promotion of technologies and management practices which tend to decrease cost of cultivation and maximize return.

Sustainable production system: Utilization of land, water and labour resources for best possible crop mix to suit to the conditions arising out of the global climate change. Crop and Enterprise diversification will be key to the sustainable production system. Recycling of organic wastes for use as organic fertilizers.

Extension: Transformation of agriculture information to knowledge and science into technology for agriculture scientists, students, farmers and extension workers. Reorganisation of extension to make it efficient, accountable and transparent.

Special attention to difficult physiographic situations viz. Tal, Diara, Saline, Acidic soils.

Respect & Reward: Restoring respect to the agriculture as profession for farmers, students, scientists and extension workers.

Financial outlay for major programme:

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2011-22	Total

Seed plan	183	191	214	231	243	255	272	1590
Horticulture	352	377	403	428	453	478	504	2995
Oil Fertility Management	564	645	725	805	886	966	1047	5638
Quality control	38	40	39	40	41	43	53	294
Mechanization	601	652	753	854	955	1056	1157	6028
Extension	410	525	590	655	720	785	850	4535
Soil & Water Conservation	80	105	130	155	180	205	230	1085
Application of remote sensing in agriculture	1	2	3	3	3	3	3	18
Agriculture Research & Education	574	685	532	512	492	472	482	3749
Total	2803	3222	3388	3683	3973	4263	4598	25931

Production Milestone: (Unit Production in lakh MT)

Year/Item	2017	2022
Rice	93.63	126
Wheat	65.75	72
Maize & Coarse Cereals	63.43	90.65
Pulses	29.2	36
Oilseeds	3.14	4.5
Fruits	60.37	80
Vegetables	186.11	225

Area Specific Issues and Strategies:

Southern plains :-Important for large share in production of rice (41%) and gram (76%) making this sub region granary of Bihar. This region covers the maximum area of the state (40,66,000 ha) having an annual rainfall of 1103 mm. The soil of the region is characterized as old alluvium to sandy loam clayey. The region comprises of districts like Bhojpur, Rohtas, Buxar, Patna, Aurangabad, Gaya, Jahanabad, Banka, Nawada, Nalanda, Munger, Jamui, and Lakhisarai. Metropolitan cities like Calcutta, Delhi well connected from Patna are the potential market.

The main horticultural crops of this region are mango, guava, banana, bael, jackfruit, cole crop, onion, potato, parwal, chilies, marigold etc. However, area under fruit crops in this region is low. Bringing more area under high density planting will help in increasing the production of fruit crops in the region. The region is known for distress sale of fruits like banana in Vaishali district, bael in Gaya, Patna and Lakhisarai districts, mango in Patna, Munger and Jamui districts, potato and Cole crops in Nalanda and Nawada districts. Hence, setting up of post harvest handling facilities for these commodities in the respective region will help in minimizing the post harvest loss of the produce and will be highly remunerative. Setting up of processing facilities of turmeric in Banka and Patna districts may also be highly remunerative.

Northern Plains :-The region covers an area of 32,61,000 ha, comprising of districts like Bettiah, Mothari, Gopalganj, Siwan, Chhapra, Vaishali, Muzaffarpur, Samastipur, Sitamarhi, Sheohar, Madhubani, Darbhanga. The average annual rainfall of the region is 1275 mm. Large area in this region remains under water also called, Chaur, Maun & Tal lands. The region is known for quality litchi production. Mango and makhana are other specialty crops of this region. Setting up of cold storage and processing units of litchi at Muzaffarpur and Samastipur districts, and processing units of mango at Madhubani, Muzaffarpur and Darbhanga, and processing units of makhana in Darbhanga district would be highly remunerative ventures.

Setting up of Agri-Export –zone for litchi in the Hajipur area has further given fullip to horticulture development in this region. Samastipur region is also known for quality papaya production. Expansion of area under papaya can be effectively carried out in this district. Quality seed production of papaya varieties in the region holds promise. Expansion of more area under makhana and water chestnut will help in proper utilization of the water congested areas and wet lands. The interspaces of old orchards of mango and litchi in this region can be effectively utilized by

growing shade-tolerant crops like ginger and turmeric, while intensification of floriculture in Muzaffarpur area can also be taken up .

Northeast Plains:- This region covers an area of 19,56,000 ha comprising of districts like Madhepura, Purnea, Katihar, Khagaria, Begusarai, Saharsa, Araria, Kishanganj, Bhagalpur. The Soil is sandy to silty loam, medium to strongly acidic, large area in this region comprise of Tal and Diara Lands. Mango, bael, banana, papaya, cucurbits, chilies, Cole crops and turmeric are the main horticultural crops grown in this region. Expansion of area under high density planting of different fruit crops can be taken up in this region. Setting up of processing facilities of banana, papaya, and mango in Bhagalpur and Saharsa district and for bael in Begusarai region could be highly profitable venture. Quality seed production of papaya and different vegetable crops holds promise in this region. Setting up of nursery for production of quality planting material of different fruit crops can also be a profitable venture.

Conclusion:-

The study shows that the Bihar has diversified agriculture production in favour of horticulture and commercial crops at very slower rate during the post-bifurcation period. But, it is important to highlight that the area under food grains still occupies more than 86 percent of total cropped area due to the traditional cropping pattern as well as traditional food habits. Therefore, area, production and yield of non-food grain crops are more stable as compared to food grain crops.

The urgent need of the hour is to increase Investments in rural infrastructure for water management/soil conservation/ construction of roads to link rural area with urban area etc. With appropriate technology, infrastructure and policy support, it is possible to reverse the declining trend in food grain production and check the migration of the people from Bihar to other states.

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