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"PROBLEMS OF INDIAN AGRICULTURE: A CASE STUDY OF AGRICULTURE IN BIHAR"

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ABSTRACT:

Agriculture in India has undergone rapid transformation in the past two decades. The policies of globalization and liberalization have opened up new avenues for agricultural modernization. Due to its importance in national output and employment, agriculture was paid special attention by India's policy makers and development planners which helped this sector to play an important role in economic development of the country and in improving income and living standard of vast population dependent on agriculture.

During last one and a half decade several challenges have surfaced in Indian agriculture which is becoming more and more severe with the passage of time. The growth rate has turned lower than the growth in population dependent on agriculture implying that per capita income in agriculture is falling. This is considered a major factor for large scale rural distress and large number of suicidal deaths by farmers in various parts of the country. In fact natural resources in the country are shrinking. There are also signs of degradation of land and overexploitation of water in the country. There is urgent need to conserve water and good management of natural resources. Long term planning and dedicated efforts are needed from higher authorities. Unique outlook and branding methods along with use of biotechnology is useful to increase growth rate of agriculture.

"India lives in its village I would say that if the village perishes India will perish too. India will be no more India." quote by Mahatma Gandhi still has its value in today's world of privatization &globalization. Agriculture played important role in saving India's rich heritage and culture since the early Vedic time. The Concept of Yagya was deeply related to the monsoon and agriculture. Jai Jawan Jai Kisan (Hail the Soldier, Hail the Farmer) was a slogan given Lal Bahadur Shastri in 1965 at a public gathering at Ramlila Maidan to enthuse the soldiers to defend India and simultaneously cheering farmers to do their best in the field of agriculture Today, India ranks second worldwide in farm output. Agriculture is

demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India.

Key Words: *Agriculture, Natural resources, Biotechnology, Commodity prices*

INTRODUCTION:

Agricultural development is one of the most talked about issues as a major portion of our population is still engaged with the agricultural industry. The widespread modernization of agriculture, development of many modern techniques and improvement in farm productivity all are the basic characteristics of agricultural development (CSSC, 1974; Bhalla&Tyagi, 1989). Due to this reason most of the strategies of development even with its focus on different domains often emphasize upon rapid agricultural development in general and its modernization in particular. The prime economic objective of agricultural development is to contribute to increased per capita incomes. Moreover, agricultural development promotes the proper conditions for farming so that planting, harvesting and processing of crops can be done effectively, which ultimately can reduce poverty and save lives (Mellor, 1966). Undoubtedly, such an

180 Development among the Tribal and Minority Societies approach has brought change in today's agricultural practices. There has been an overall improvement in agriculture all over the world and India is not an exception. Over the years Government of India has tried to promote agricultural development. With their many initiatives Government of India have tried to convince farmers so that they can adopt modern techniques for the cultivation of their crops and most importantly for the improvement of production. But often the issue of access to these facilities came in the way. Because, still maximum numbers of farmers of our country live in the villages, they have no proper idea regarding the usage of modern farming techniques. Moreover, they do not have correct information regarding modern methods of soil preparation and use of high yielding seed varieties. Often their low level of education and lack of communication has resulted into a general lack of awareness regarding the modern research and inventions on agriculture. Consequently, these factors haven't helped agricultural development to be as successful as in many other parts of the world. Quite naturally a number of studies have been undertaken to understand the issues and problems of agricultural development (De walt, 1994; Antweiler, 1998; Purcell, 1998; Sillitoe, 1998; Martin et. al., 2002; Sillitoe et. al. 2004; Ellen, 2006). Moreover, many researchers (Hendy,

2000; Berrigan, 1979; Engel and Salomon, 1997) are also concerned with the topic of sustainable agricultural development and sustainable farming systems. The discipline of anthropology has also played a significant role in understanding the emerging issue of modernisation of agriculture. Mostly scholars (Rhoades, 1984; Sillitoe, 1998) have often emphasized upon the local procedures and strengthening farmers' voices in negotiating definitions and implementation of sustainable agricultural development (Cleveland, 1994, Sumberg&Okali, 1997). Netting, (1974) recognized that there is a positive correlation between indigenous farmers' ecological knowledge and the sustainability of their farming system. He pointed out that there is often an assumption that "traditional cultivators" are more sustainable than "commercial and industrial agriculture" that is unjustified without supportive data (Netting, 1993).

Problems of Indian Agriculture:

Golait, in a Reserve Bank of India paper, acknowledged the positive role of crop diversification initiative announced in government's response to reports of farmer suicides. Golait added, "Indian agriculture still suffers from:

1. Poor productivity
2. Falling water levels
3. Expensive credit
4. A distorted market
5. Many middlemen and intermediaries who increase cost but do not add much value
6. Laws that stifle private investment
7. Controlled prices
8. Poor infrastructure and
9. Inappropriate research.

Thus the approach with mere emphasis on credit in isolation from the above factors will not help agriculture".

The farming techniques we currently use such as use of tractor and other machines are foreign country oriented where people have larger land where as in India, more than 80% of Farmers have land less the 5 Acre which makes farming unaffordable. The use of harmful Pesticide and Insecticides also make farming an unhealthy profession. The Cancer train which travel from Punjab to Rajasthan is the symptomatic proof of it. The Inflation is one of the serious

issues in the country, to curb the rate of food products someone in the food production chain (Farmer, distributor, retailer etc) has to face the blow, which is directly or indirectly faced by our farmer. Government policies so far are centralized policies that mean a single policy for all the farmers in the nation. Each and every farmer has his own independent infrastructural problem which is needed to be solved individually. Government's main focus on irrigation is appreciable but the lack of drainage system leads to over flow of water during Monsoon season. The minimum support prices (MSPs), announced by various State governments, have traditionally been the instrument used to fight declining prices; they have scarcely been effective at the farm level. Moreover the impact of climate change is the major cause for crop failure.

Bihar: As it exists today:

Re-organized on 25th November, 2000, with 38 districts stretched in an area of 94163 sq. km. and located between 83"19'-50" to 88"-17'-40 E longitude and 24"-210" to 27"-31'-15" N latitude, Bihar is an entirely land locked state, although the outlet to the sea, through the Port of Kolkata, cannot be said to have been very far away. Bihar linesmen way between humid West Bengal in East and sub-humid Uttar Pradesh in West which make its climate correspondingly it is bounded by Nepal in its north Jharkhand in South, West Bengal in East and Uttar Pradesh in its West. Geographically it has been divided into North Bihar Plain and South Bihar plain, each of the two with its certain distinct geographical similarities and differences both. The State has several rivers and their tributaries small rivers but of all certain important and ever flowing are: Ganga, Sone, Gandak, Kosi, Ghaghra, Bagmati, BudhiGandak, Poonpoon etc. Nearly 40 percent of its cultivated areas are flood prone and another 40 percent drought prone.

After bifurcation of Bihar in November, 2000 major industrial centres, forest areas and mineral belts, for which united Bihar was known, became part of the newly created Jharkhand state and all that remained as part of Bihar are agricultural land and allied sectors. Agriculture is the main prop of production in Bihar economy, which provides employment to about three quarters of states total work force and contributes nearly 38 percent of the state's gross domestic product. Primary crops, the state cultivates are rice, wheat, sugarcane, lentil, jute, etc. and among supplementary crops includes oilseeds, pulses, barely, gram, maize etc. beside many other coarse grams. Varieties of

vegetables and fruits are produced in the state, and for production of fruits like litchi, banana, mango, the state is widely known.

Bihar agriculture, the main prop of production since the bifurcation of the state, is backward, lying in dilapidated condition, not because of its poor capabilities to be transformed itself into a modernized agriculture but severe lack of infrastructures specially lack of required capital for being invested to modernize it. Its North Gangetic plain, comprising of approximately 56980 sq. kms.possesses alluvial soil, even to the extent that the soil, lying even to the foot of the Himalayan hills, does not have rocky formation and whenever water can be impounded, rich growth of crops is possible. But the worst, this genetic plan suffers from, is its flood prone devastation every year. The south Bihar plains, mainly its genetic plain and Sonebasine, are flood prone and its south zone comprises of hilly terrains is drought prone. The climatic condition of Bihar is highly amicable for growing varieties of cereals, coarse grains, vegetables, fruits and fiber crops. Its rural areas are widened in 92, 358.40 sq.kms. And urban areas 1804.60 sq. km. its height is 173 feet above sea level main soil is clay soil, sandy soil and loamy soil, its temperature varies from maximum of 44°C to minimum 5°C and average normal rainfall records 116.4 mm. All these condition are much favorable for agricultural activities.

The poverty of Bihar can be estimated on basis of Tendulkar Committee report, which inferred that 54.5 percent population of Bihar has been living below poverty line, and its percentage for rural areas is 55.7 percent and in urban areas 43.7 percent[1]. Their 90 percent populations still live in villages and depend fully on agriculture for their livelihood, a sector whose growth is miserably tardy and condition is that of a backward agriculture. Bihar continues to be at the lowest/bottom of the ranking of State with regard to per-capita income, as Rs. 10,055 or 32.2 percent of average per-capita income of India (Rs. 31,198). In recent years there has been claimed by government of Bihar for increase in it and reaching a height of Rs. 16,119. Yet this growth, if compared to average all India per-capita income of Rs. 46,492 in recent year, records less than third of all India average per-capita income. It means that even today, when a high growth rate achievement in Bihar is claimed by government of Bihar, per-capita income growth in the State, in comparison with the average all India per-capita growth rate has decelerating trend[2]. The areas of net sown area in the state have been declined and came down from 60.5 percent

of total geographical areas to 59.4 percent in recent years. Agricultural productivity in Bihar appears to have been extremely lower than the other states like Punjab, Haryana, and Andhra Pradesh etc. In regard to per-hectare production Bihar lags far behind other agricultural state, Bihar has lowest annual per-capita power consumption in the country, only 122.11 KWH against the national average of 778.71KWH. Besides all these brief illustrations, given above, which are indications of backwardness of Bihar economy, the condition of agro-allied sectors like agro-based industries, dairy, poultry, piggery, horticulture etc. also in the condition of complete higgledy-piggledy in absence of adequate facilities required for preservation of produced materials, developed transportation system, absence of processing facilities, research etc.

The brief economic profile of Bihar state witnesses that the backwardness of state agriculture and its allied sectors, the main sources of livelihood of people and employment providers are seething in an environment which is extremely inadequate for giving an upward developmental boost to the state economy. Peasant are doing subsistence agriculture which is fully unable to create saving to peasants for further investment on their agricultural holdings for their development and modernization. The sector, in totality, is also unable to save that much surplus, as required for capital formation and being invested on modernization. Whatever capital is formed appears in savings of big land holders and Zamindars, who have leased their agricultural lands to poor and marginal peasant, as absentee landlords, who are few and far between. Since no radical land reforms have been implemented in the state as yet the capital thus formed is not invested in development of agriculture, in that stead it drains out to sectors other than agriculture for being invested in other business in urban centre's in which the big land holders are engaged in. Sequel to all these factors, combined with several others alike, create acute paucity of developmental capital, required by the economy of Bihar.

A favourable factor for Bihar economy is its landed character, agro-allied industrial base which fall in the category of priority sector. Barring a microscopic sector, scarce number of big industrial centres like Barauni, the entire production sectors are either related to agriculture and its allied sectors like horticulture, dairy, poultry piggery or medium scale industries like sugar mills, textiles, jute etc. which fall in the category of priority sector. Besides these the central and state government sponsored schemes, self-employed persons,

Self Help Groups (SHG) etc. are sectors which come under the ambit of priority sector. For priority sector lending each sector has been allotted fixed quota for total banks credit flow and differential rate of interest has been decided for such lending by banks. But the banking profile of Bihar is also unsatisfactory.

Major Challenges:

State agriculture faces multifaceted challenges that emanate both from within the system and also from outside. Low productivity across all the enterprises, crop, horticulture, milk, meat, egg and fishes has traditionally described the state agriculture. The low productivity has consequential effects on low income and high poverty of its population. The major factors contributing to low productivity is described as below,

1 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 distracts 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 reflects on the subsistence nature of state agriculture. Institutional extension system faces the challenge to take latest technologies to farmer's field.

2. 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.

3 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 percent) dependent on diesel based tube wells. High cost of diesel based irrigation makes it a very difficult input for even rabi crops.

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

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

6 Inadequate Marketing and Processing: Marketing and processing infrastructure are not adequate affecting farmer's income.

7 Flood & Drought-State agriculture is dependent on Monsoon.A heavy rainfall lead to flood and a deficient rainfall could lead to drought.The paradox of flood and drought occur simultaneously almost every year making agriculture highly vulnerable and unstable.

Vision & Policy perspective:

1. 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 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.

2. 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.

3. 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.

4. 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.

5. Agricultural planning is much dependent on the statistical input generated through age old system. It needs a relook with appropriate input from remote sensing technologies. Local and decentralised 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.

6. Agriculture marketing will be one area which needfocused 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. Flood and drought has 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.

14. 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.

15. 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.

CONCLUSION

The above discussion of different local difficulties among the farmers of Bihar has raised a number of important issues. These issues are vital for real development of agricultural situation and the farmers of our State. Present study further reinstates the realities of developmental policy involving agriculture and their actual implementation at grass root level.

This study has identified that Bihar State farmers prefer to cultivate staple food crops, followed by accompanying food crops and lastly pure profitable crops. On average, farmers produce three different crops per year such as staple i.e. paddy; accompanying i.e. potato and various green vegetables and pure profitable crops i.e. flower, betel-leaf, potato, groundnut, sesame and guava. These crops are dominant, profitable and having market demand in several regions of the State. Therefore farmers of the state prefer to cultivate these lucrative crops. Conversely, they cultivate paddy only for consumption. As a result paddy cultivation is decreasing all over the State.

Then again, there are some other reasons behind the decrease of paddy cultivation. For example, the occurrence of floods in the some 188 Development among the Tribal and Minority Societies paddy growing areas affect paddy every year. In every year a disastrous flood occur in these areas which affect all the villages and destroy agricultural land, livestock, farming constitution and life of the farmers. In addition, farmers of the some region fail to

cultivate paddy due to lack of irrigation. On the other hand, fragmentation of paddy land has made some holdings no longer viable for sustained production. Finally, on top of all that, the increasing cost of production on one hand, and decreasing farm gate prices on the other, have caused many farmers to stop paddy farming due to marginalisation of net farm returns.

Precisely, this Study has noticed that farmers of Bihar State need many supports for improvements of farming systems. Farmers claim extension programs and financial supports. Prices of all inputs of farming are increasing day by day. Most of the farmers interviewed complained that farming is becoming increasingly unprofitable, not only because the negative impacts of climate and disease, but also because production costs keep increasing while commodity prices continue to decrease. Farmers use large quantities of fuel to operate machinery and irrigation pumps. So raising fuel prices seriously reduces their profit margins. Studied farmers consider that the low prices, low profits and volatile markets of commodity crops are greater problem than climate variability, because crops do better with irrigation than with rain.

Therefore, Governmental supports regarding above said farming problems are immediately required. On the other hand, the developmental efforts in farming system are required with effective participation of varied sections of farmers in the State.

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