



Prospect of Agro Forestry in Jharkhand

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Climate change is a most important threat on the future of food production and food security. Jharkhand presents a very gloomy picture, so far as agricultural productivity is concerned. Agro forestry is the permanent solution for employment generation especially for the socially disadvantaged sections and removal of rural poverty. So, Agro Forestry is the need of the hour.

Key Words: Climate change, Agro forestry.

Introduction

The success of green revolution of sixties has given a boost to agricultural production and made India into an exporter instead of a chronic importer of food grains. The production of major food crops like paddy, wheat, millets and oil seeds has increased by many folds. It is true that green revolution was successful only in Punjab, Haryana and some parts of UP and Rajasthan. A similar revolution is the need of the hour as we are experiencing stagnation in growth of agricultural production, particularly in the regions which had contributed significantly to the success of the first green revolution. We have to reinforce our technology and infrastructure to create second green revolution and it must be for masses. Equitable sharing of prosperity and involving poor in developmental work should be the goals of new green revolution.

From the beginning of new millennium, the attainment of food security is the biggest challenge before Govt [Sundar, I, 2004]. According to some recent estimates, the country will need about 260-264 million metric tones of food grains, 130-150 million tones of fruits, 10-14 million metric tones of meat, 35 billion eggs, 10-14 million metric tones of fish and 12 million metric tones of edible oils to provide adequate nutrition to 1.35 billion people by 2020 A.D. The productivity of crops in India is low as compared to China and very low compared to developed countries. The dependence on agriculture is only 2-12 % in developed countries, whereas in India, it is 65% even today. The land holding size is 100-500 ha in dependability countries as against 72% farming community people owning less than 2 ha holding which is also located at different places in their villages. Thus, the situation of Indian agricultural can not be compared with those of advanced countries. Indian farmers are losing their status in the society day by day. The farmers get low prices for the product, whereas, they have to pay high prices for inputs. Moreover, the fluctuation in prices is very common and unpredictable. The subsidies given to farmers is lower than subsidies/facilities given to traders, industrialists etc. The improper market for agricultural products, lack of storage and transportation, non-implementation of minimum support price due to lack of proper marketing system, regulations, policies, punishment etc are responsible for poor economic condition of farmers. India witnessed a sudden spurt in cases of suicides by small and marginal farmers in different parts of India. The farmers are unable to clear the dues taken from money-lenders, banks etc. So the condition of farmers have become worse day by day.

Problems of Jharkhand

Jharkhand, a newly born state is spread over an area of 79.71 thousand square kilometers and having a population of 26.95 million as per 2001 census is predominantly an agricultural state which employs more than half of the total workforce [6740803 persons]. But, the productivity of agriculture is very low. Farming is done on traditional basis as use of modern inputs is very limited. Out of total geographical area of 79.71 sq kms, the net irrigated area is only 1.57 lakh ha, [8% of net sown area of the state]. Lack of irrigation facility, HYV seeds and fertilizer are the causes of low productivity of agriculture.

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The farmers have to depend on rainfall which is erratic and uncertain. Food grain yield is very low in comparison to other states which can be seen from following table.

Table - 1
Statewise Food Grain Yield in India(Kg/ha)

States	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Bihar	1664	1568	1600	1535	1311	1319
Jharkhand	1199	1053	1490	1479	1077	1077
Chhattishgarh	1118	651	1228	1278	1111	1119
Orissa	1399	716	1341	1414	1349	1354
Punjab	4040	3828	3929	3943	3986	3984
Uttarkhand	1742	1508	1672	1649	1548	1554
West Bengal	2424	2374	2422	2444	2423	2433
Tamil Nadu	2209	1612	1549	1536	1847	1851
Maharashtra	874	846	897	917	948	951
India	1734	1535	1731	1744	1716	1721

Source; Ministry of Agriculture, Govt. of India

The chotanagpur plateau and Santhal Pargana region ,previously known as South Bihar [now Jharkhand],though famous for its landscape ,hills and forests ,natural and mineral recourses has undulating and sloping land surface which is the cause of land degradation and soil erosion Poor quality of soil and limited water recourses together constitute quasi stagnation of agricultural growth rate The farmers still has to depend on money lenders for loans due to ignorance, laziness, illiteracy etc Moreover, the banking facilities are yet to develop and there is always delay in providing bank loan. The cooperative banking is not functioning due to non-recovery of loans According to 2000-01 census the all India average of loan sanctioned by commercial banks was Rs 824/-per hectare whereas in Jharkhand it is only Rs.269/per hectare. Since there are no other means, the farmers have to depend on agriculture only for their livelihood .Their per capita income is very low .According to the 55 the round of NSSO [1999-2000],the rural and urban poverty rate among tribals are 60.62 % and 46.78% respectively whereas they are 44..5% and 37.4% in all India level respectively.

Though Jharkhand is rich for its natural and mineral resources but modern civilization is unable to exploit its resources The tribals are exploited by so called cultural,socio-economic ,political set up .The tribals are worst victims of the political governance and the developmental strategy of the state .They suffer from exploitative structure of governance of forest department ,market structure ,rural stagnation and mass poverty ,marginal gains from industrial ,infrastructural projects and poor access to education health and education disposition of both individual and community services etc .Jharkhand was not able to achieve the gain of green revolution

The advancement in space and nuclear technologies will soon take India to the group of developed nations and India's major break through has been in IT and IT related services but on the other hand agriculture is at cross road today .The growth rate of agriculture has been decreased during last decade, the production of food grains stagnated and the issue of food security has emerged. So there is a great challenge to bring sustainable economic growth and economic prosperity not only in urban areas but in rural areas in every part of the country .Rural development must be a priority of Govt. as more than 65% of population is still living in villages and over 85% of rural people depend on agriculture for their livelihood

In Jharkhand agriculture is a major sector as it employs more than half of the total workforce [6740803 persons] of the state .Since most of the farmers are small and marginal farmers ,most of their earnings are utilized to ensure food security With growing population and over exploitation of natural resources ,the pressure on food security and employment generation will continue to mount ,further affecting the quality of rural life .Hence it is necessary to develop a suitable strategy to improve the economy of the rural

sector through agricultural development and sustainable utilization of natural resources .Since agriculture is the main source of rural employment ,so agricultural development is necessary but it is not an easy task Due to lack of irrigation facilities ,a majority of small and marginal farmers are heavily under-employed for 6-8 months in a year and even under well established irrigated conditions ,the growth of agricultural sector itself has been almost stagnant for the last 8-10 years .In Jharkhand ,out of total geographical area of 79,714 sq km, the net irrigated area constitutes 1.57 lakh.ha. Which is only eight percent of the net sown area of the state .Moreover, there are 16 river basins in the state and the ground water resource is 5482 million cubic meters the average state of development of ground water in the state is 20% approximately. Policy makers and agricultural experts advocate second green revolution to accelerate growth in agricultural sector .But ,it is very challenging as the potentials for enhancing crop yields have already been exhausted in the fertile agricultural belt [Punjab ,Haryana etc]covered under assured irrigation ,Jharkhand is a rain fed agricultural state So ,agricultural development can be brought through developing irrigation facilities. For sustained agricultural growth, the availability of water is necessary. But, Jharkhand presents a very poor status in terms of irrigational land and it is almost stagnant over last five years whereas economically developed state Punjab has highest percentage and newly formed state Uttarkhand followed by Chhattisgarh has greater percentage than Jharkhand that is clear from the following table.

Table - 2
Net Irrigated Area over Net Sown Area

States	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Jharkhand	9.2	9.2	9.2	9.2	9.3	9.2
Bihar	61.1	60.5	60.1	60.1	54.25	63.24
Chhattisgarh	24.0	22.5	22.8	25.3	26.2	32.23
Punjab	95.4	98.1	95.2	95.2	95.2	91.2
Tamil Nadu	54.2	50.34	45.8	51.7	55.7	56.2
Uttarakhand	44.5	44.9	44.5	44.5	45.0	45.23

Source; Ministry of Agriculture, Govt. of India

Thus, lack of irrigation facility is a major constraint on agricultural development so, a second green revolution is needed which will include all the states and that will be for each and every farmer.

Remedies

Achieving the goal, we need to look for technology which can be adopted by farmers in arid and semi arid lands and those farmers who depend on rainfall like the farmers in Jharkhand. But, for presently, emphasis must be on Agro forestry as it is an important alternative for removal of rural poverty.

Agro Forestry

Though the word agro forestry is a new word but it has been practiced from ancient days. In modern times, agro forestry is the need of the hour. In Jharkhand, due to lack of irrigation facility, agriculture mainly depends on uncertain rainfall. So, agro forestry is one of the important ways that can be practiced on degraded and non-irrigated land, generally used by small and marginal farmers which constitute 84.53 % of the total [Singh, 2002] in Jharkhand. R. P. Dwivedi thinks that agro forestry is a marriage of agriculture and forestry. Agriculture is used for the production of food grains, fodder etc and forestry is utilized for fodder, wood etc. The system yields almost everything which people need. [Dwivedi, R. P, 2008]

Due to natural calamities and farmers incur losses. Such lands can be profitably used for establishment of draught tolerant fruit crops like mango ,guava, jack fruit ,papaya ,bell ,ber,amla ,pineapple ,pear ,tamarind etc and other forest resources like mahua, sal ,kusum ,karanja ,sirish ,tendu etc as they have the capability

to withstand the vagaries of nature.

Moreover year round employment can be generated and protection of soil from erosion and runoff of rain water will be possible. There will be enhancement of water table as they absorb atmospheric carbon dioxide all round the year. Underutilized plant species can be used for food, medicinal and nutraceutical purposes and fetch proper price even in local markets. In this way income will increase and that will bring improvement in the quality of rural life. By increasing the tree cover people will be protected from different kinds of pollutants. Socially disadvantaged sections of the population will get opportunity for employment and poverty will be removed from rural areas. Small farmers in Jharkhand can become timber suppliers with the promotion of agroforestry. For this the Govt must take effort for supplying more and more improved quality of planting material.

The rural poor especially the tribal can get a large quantity of food and fodder but for this several trees, shrubs, herbs, climbers etc have to be planted. Fuelwood can be obtained from the trees that will meet energy requirements. These systems can supply raw materials to agricultural and forest based industries like furniture, paper, pulp, saw mills can be established that will generate employment opportunities for the rural landless poor people. Maximum utilization of natural resources will increase the ecological and economic benefits.

In this way agro forestry fulfils human needs, protects from pollution, creates employment, increases income and improves the quality of the poorest of rural poor as most of these activities are labour intensive, the landless farmers can also find employment. For the success of agroforestry, the forest policies of the Government of India must be changed. Restriction on cutting and planting of trees in private land has not only created a lot of hardship for rural people but it is also a disincentive for planting more and more trees. The farmers should be given encouragement for increasing the tree cover. Restriction should be removed on the movement of wood. Since most of our farmers are illiterate and ignorant, so proper training for planting and protecting trees should be provided. NGO's must come forward. SHG should be formed as they have common interest.

Livestock Development - It provides gainful self employment and food security to the poor as a majority of livestock among the weaker sections of the community through which the poor families will be able to build new assets every year in the form of crossbred cows etc [Hegde.G Narayan 2009]

But, for this, the Govt. should supply superior quality of feeds and fodder and strengthen veterinary health care through an extensive network of vets and Para vets to ensure good health which has and the quality of milk. There is also scope for promoting sheep and goat husbandry, piggery and poultry for those farmers who are unable to adopt dairy husbandry. Livestock is an integral part of agriculture as it is a major source of organic manure.

Efficient Utilization of Water Resources - There must be proper plans for utilization of water resources through ground water wells, tube wells, small farm ponds, bigger tanks, diversion of lift irrigation schemes etc. Land use is always related to soil quality and not land economics.

Water is a crucial input of agricultural production. As most of the small farmers are living in arid and semi-arid regions and are deprived of irrigation facilities. Promotion of water shed development schemes and sustainable use of all available water resources should be ensured to improve crop yields. In Jharkhand, there are 16 river basins and the ground water resource is 5482 million cubic meters. The average state of development of ground water in the State is approximately 20 % which is less than the national average. The basin-wise per capita water availability, which is around 1859 cum per annum for the country as a whole. So, the Government must take proper care on this ground...

Adequate financial assistance is needed for successful operation of different plans and programs, especially for long-term strategies so, labour intensive technology must be adopted which will provide employment.

Conclusion

Agro forestry is the permanent solution for Jharkhand as degraded and waste lands can be properly used. Live stock development is the need of the hour that must be enhanced but for this the Jharkhand Government must take some positive steps. In recent years Jharkhand suffers from water crisis that must be solved by taking proper water management policy. Self help group must be formed as they have Common interest Awareness and motivation can be created. Regular support can be provided by the members of the user groups to one another. In rural areas of Jharkhand where the poor and illiterate, lacking initiatives, must be motivated by forming self help group to build capabilities among them. Women should be empowered to bring success of agro forestry as women can bring overall development as they are the major contributor to agriculture and play a prime role in ensuring food security and nutrition status of their house hold members. By providing proper education and training to them, the level of confidence and awareness can be created among them. They can play an active roll not only as food producer but also food providers as women have always had the habit of saving for a rainy day as they experience a daily dilemma consuming verses saving.

Agro forestry must be enhanced for employment generation especially for the socially disadvantaged sections and in this way, rural poverty can be alleviated.

References

- Budhraj, Jyoti and Jyoti, Anand, (2008), "Workplace Challenges for Women in 21st century", HRM Review, September: 32-36.
- Bhattacharya.B and P.Paul (2000), Food Security in India in the context of agreement on Agriculture, in proceedings of Seminar on WTO vis-à-vis Punjab Agriculture, held at PAU, Ludhiana on May, 27th, and PP 35-42.
- C. Chandrasekharan (1998), "Rote of Non wood Forest Products in Sustainable Forest Management" Forest Usufruits.
- Collins Roberts (1997), Towards a positive Economic theory of Hedging, American Journal of Agricultural Economics, Vol. 79. no.2.
- Datar Chhaya, (2008) De-centralized Governance, Gender and Access in rural drinking water, IJIR, vol. 44 no.2 Oct, 2008.
- Dasgupta, Monica (1985), "Informal security system and population detention in rural India." NCAER working paper no.2 (New Delhi, National Council of Applied Economic Research).
- Dwivedi R P, Chaturvedi, O.P, Dhyani, S K, "Greening India through Agro Forestry", Kurukshetra Vol.56 No-8, page 31-36
- Gopaldas Tara (2006), "Hidden Hunger, the problem and possible interventions", Economic and Political Weekly, 41(34), 26th Aug, pp 3671-74.
- Hegde, G. Narayan "Second green revolution for sustainable livelihood of small farmers". Sustainability tomorrow. Jan-March, 2009 Vol. 4 , issue 1 page 32-36
- Jharkhand Development Report (2010), A study for Prabhat Khabar by Indicus Analytics.
- Kohli, Anju and Sharma, Chandrika (2008),"Dimensions of poverty and Economic development." Anesak, 38(1, Jan-June-58-71.
- Srivastava, R.C and Ali, J (1981)"Unskilled migrants, their socio-economic life and patterns of migration" in R.B.Mondal (Ed) frontiers of migration analysis, New Delhi, concept publishing house, pp 264-83.
- Sinha H (2005) People And Forest : "Unfolding the Participation mystique" concept, New Delhi.