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STRATEGIES FOR CHANNELIZING TRANSFER OF TECHNOLOGY IN MEGHALAYA

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The Indian agriculture is the largest private sector business of the country where over 110 million farmers are engaged in doing business which lead to self-sufficiency in terms of food production as well as net exporter in some specific agricultural commodities. This is the result of untiring effort of agricultural scientists, hardworking Indian farmers and appropriate policy planning and project execution. Although we have achieved a greater milestone but it is the time to pay great effort in producing more diversified and quality food at affordable price to address both sustainability and development in Indian agriculture in the years to come for meeting the requirement of ever increasing population. Agriculture sector in the country has witnessed uneven production and productivity across the region and its allied sectors. The reasons for this uneven growth may be multiples like research breakthrough in limited crops, disparity in potential yields due to improper technology transfer mechanism, lower productivity from rainfed area, lower input use and its use efficiency, lack of food processing and value addition, high post-harvest losses, very low agricultural export, poor market infrastructure, unskilled human resources at grass root level etc. which need to be tapped to harness the great competitive advantages of India in agricultural export.

Meghalaya, being one of the North Eastern states of India, which have undulated topography with high amount of annual rainfall affecting mechanizations and scale of economy of production of food crops. Economic development of Meghalaya depends primarily on achievements in the agricultural and allied sectors where nearly 80 per cent of the population (predominantly rural) are dependent on agriculture for their livelihood. The management of available resources like land, water, forest resources for the economic development remains the major challenging problem for this state. Although as stated above, economic development is depending on agriculture and allied sector but still the state has to

realize its fullest potential by adopting the improved agricultural technologies and their package of practices which have potential to shift the farmers from subsistence to commercial farming which are primarily responsible for dragging down Meghalaya's economic position. So, in this article, we will discuss about them as well as some of causes and remedies to these technological gaps to lift the socio-economic status of the farmers of this state.

Most of the farmers of Meghalaya still practicing traditional farming at subsistence level due to their poor accessibility to improved and modern methods of agriculture like use of quality inputs including seeds of high yielding varieties/hybrids of major important crops, chemical fertilizers, plant protection measures and farm mechanization because of undulating topography, transport and communication problem, population dispersal pattern, inadequate credit support, poor marketing system, etc. The backwardness in agricultural income of rural people is due to low per capita availability of land under cultivation rather than lower productivity of land. Productivity of land in the state in fact, is 29.5 per cent higher (Rs. 47,401/ha) than the national average (Rs. 36,615/ha) which is due to the dominance of high valued horticultural crops and rearing of the livestock in the State.

Net sown area of Meghalaya is only 13 percent of its total available geographic area because almost all state is occupied by hills only and rice is the most cultivated crop for the people living in this state. The New Agricultural Policy of the state has projected area to be brought under fruits and spices. As against this scope, the challenges are the development of markets, cold storage and processing units from almost non-existent base. Provision of credit in the absence of land records (mostly owned by community rather than individual ownership) is also a serious constraint because it is very difficult for the bank authorities to give the loan and take back the same. The state cannot compete with other states as far as the productivity of various crops are less compared to other states due to poor penetration of improved agricultural technologies in the remote villages of Meghalaya. The cost of production, post-harvest, material handling, packaging, storage and transport will make agriculture a less profitable option as compared to the other highly economic opportunities utilizing the same resource base with more sustainability. The exploitation of mineral resources, quarrying and mining activities are already rampant with their ill effects but landowners prefer those activities to agriculture due to its overall low profitability, uncertainty and drudgery.

Research experiences with resources conservation and watershed management have also confirmed the fact that farmers are on the looking out for other economical options than agriculture. The farmers can be stopping not only the practice of *Jhuming* but also be persuaded to adopt such profitable ventures which will provide them the much-needed financial security, food security and long-term resource sustainability. The situation is further aggravated by the lack of proper marketing services, lack of adequate roads and transport facilities, lack of processing units, lack of organized marketing structures along with other factors have caused great inconveniences to the farmers who are compelled to dispose-off their produce often at uneconomical and uncompetitive prices in their local weekly village markets.

Meghalaya do not even have mere basic infrastructural facilities for marketing of agricultural produce such as meeting place for buyers and sellers, airport for handling agricultural produce, etc. By and large, these markets are owned and managed by local bodies which rarely pay any attention to their development. Post-harvest handling which are facilitating functions like sorting, grading and standardization, packaging, post-harvest treatments etc. are not commonly practiced which impact the shelf life of the produce in storage and long distant transportation. The losses in transit are estimated to be 35-51% in case of fruits and vegetables.

In the State of Meghalaya, the maintenance of completed Minor Irrigation schemes is being looked after by the Irrigation Department. Despite receiving highest rainfall in the state, the farmers are unable to take second crop in the terrace due to lack of irrigation facilities. The need for Participatory Irrigation Management (PIM) is being felt now, but the progress towards the implementation of the PIM is still in the infant stage. As the system is yet to be fully evolved, the achievement so far made in this respect is only to the extent of formation and registration of Water Users' Associations (WUAs) in the completed project areas.

The present central Govt. has given greater attention to the North East region to bring them in mainstream in terms of development and infrastructure and made a mandatory for all the programs and project to invest their some proportion for the development of the region. During the 12th Five Year Plan 2012-2017 they endeavor to enhance rice production by narrowing, if not bridging, the gap between demand and supply of rice (staple diet of the state) through implementation of the State Rice Mission with technical assistance of scientists

and rice experts of the International Rice Research Institute (IRRI), Los Banos, Manila. The Government has been promoting winter planting of rice, in the plains bordering Bangladesh, through assured irrigation in the form of small water harvesting structures, shallow tube wells and surface water pumping systems. Apart from Rice the various stakeholders have been engaged in popularizing Maize cultivation in the State through introduction of high yielding varieties and hybrids.

In Meghalaya, floriculture is mostly practiced as a hobby by flower lovers however, high price for sale of planting materials, seeds, cut-flowers etc. and their increasing demand, has created awareness in the flower growers regarding their commercial aspects. Although commercial Floriculture is a recent development in Meghalaya, however, considering the natural advantages of having the most varied range of climatic conditions in the country, it has a very high potential for cultivation of all types of flowers. The rich flora and the many species of Orchids growing wild in the State which is the highest ever recorded in a single concentrated area is a testimony to this effect.

Suggestions for Effective Transfer of Technology

- ❖ To overcome the constraints of net sown area (only 13 per cent) and being a hilly state, Govt. may focus their efforts to increase the cropping intensity from the existing 120 per cent to 150 per cent by providing irrigation facilities, seeds of improved varieties/hybrids of important vegetable crops etc. to be cultivated in rice/maize fallow during *Rabi* season.
- ❖ Extension activities for agro advisory services should increase in these areas so that farmers can become aware of the other agriprenurial opportunities like backyard poultry/piggery, strawberry cultivation, fish rearing by digging pond to harvest and store natural water, integrated faming system etc. to energize their inner state to follow these advanced practices.
- ❖ Farmers should be mobilized into various formal/informal groups like SHGs, FPC, producer cooperatives, farmers' club etc. to increase their access to advanced technologies and marketing options for better income from the agricultural enterprises.
- ❖ Scientists should visit the farm or home of farmers to give proper guidance in adopting the newly introduced technologies by conducting demonstrations with them so that they will get the confidence in their adoption.

- ❖ Development of improved technologies by greater involvement of farmers and their multiplication and distribution with the help of SHGs for effective penetration and better utilization of these developed technologies in the farmers' field.
- ❖ Improving and expanding agricultural extension service through appropriate convergence mechanism among the State line departments and other pluralistic stakeholders to effectively demonstrate and transfer of proven yield-maximizing technology in the farmers' field developed by ICAR and SAU.
- ❖ Making small operational holdings of farmers economically viable and profitable through forming farmer-SHGs, participatory approach and community action on cluster basis and improving their knowledge and technical skill about the scientific agricultural practices through appropriate capacity building programme. The group based approaches of farming will empower the farmers through efficient learning of cultivation techniques, improved access to funding and achieving stronger bargaining power.
- ❖ The majority of farming in Meghalaya is by-default organic in nature therefore there is a need to identify the appropriate agricultural enterprise specially non-traditional and high value crops endemic to the region which has great economic potential in that particular area for up-scaling the agripreneurial venture.
- ❖ As the most of the farm of the hill region is by-default have the potential of converting into integrated farming system in the farmers' field where maximum input of different agricultural enterprises met from the by-product of farm itself. This will not only minimize the cost of production but also increases the input use efficiency and ultimately improve the livelihood security of the farmers.
- ❖ The hill agriculture is invariably has a niche for livestock based livelihoods for their dietary protein requirement as farmer finds larger area under rangelands and highland pastures and this is highly liquidable which attract more number of farmers towards these enterprises. Under mixed farming system followed by small and marginal farmers livestock not only supplement the family income but also improve the soil health by adding animal dung and their bedding material as manure and compost for the crops. Therefore there is need to pay major attention to these livestock sector while preparing the strategies for agricultural development.
- ❖ *Jhuming* need immediate attention to address the social and human aspects of the problem of *jhuming* and offer alternatives acceptable to the farmers in consultation with the local farming communities to minimize *jhuming* by timely provision of

quality planting material and production inputs and efficient extension and marketing services.

- ❖ The status of women in NER is relatively better than in many other States. Despite women actively participate in economic activities, particularly in the hill areas their participation in decision-making process is low. Focused attention should be paid to empower women through formation of SHGs to improve their credit worthiness and bargaining strength as a group.
- ❖ The entire Meghalaya is favorable for growing a wide range of horticultural crops like fruits, vegetables and other cash crops. Small areas with their own micro climatic conditions provide suitable sites for growing particular crops with unique geographical identification which can fetch higher prices in the market such as apples, citrus fruits, walnuts, plums, peaches, bananas, mangoes and pineapples.

Conclusion

Intensification of agriculture in Meghalaya needs to be taken up by considering their unique agro-ecological as well as socio-economic setting and identifying the ecologically & economically sustainable farming options with the integration of interdependency and synergy between allied sectors of agriculture, viz., crops, horticulture, livestock, fisheries, forestry and the associated natural resources. Commensurate strategies through enabling policy environment need to be developed by considering the basket of choices of suitable production systems capturing every niche.

Reference

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