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**Research Paper**

# Role of Information and Communication Technology in Agriculture and Horticulture Sectors: A Case Study of Himachal Himalayas

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***ABSTRACT***
*Information and Communication Technology (ICT) has gained great importance in the field of agriculture. ICT can definitely bridge the gap between economically and technology backward classes and contemporary world, if executed properly. The present strategy of rural development mostly concentrates on poverty mitigation, improved employment opportunities, provision of basic amenities and infrastructure facilities through modern programmes. Information & Communication Technology (ICT) is latest tool for rural development. ICT, if used appropriately can be of great benefit for the development at grass root levels. Appropriate education and execution of ICT programmes in easy language which is without difficulty understandable to the rural communities can certainly bring about revolution in development of agriculture in rural areas.*
***KEYWORDS****: ICT, Topographical problems, Pest Management, food grains and crop rotation*

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## I. INTRODUCTION

Mahatma Gandhi's thought to grow rural India was based on his understanding of the society based on village system. Conversing on the significance of villages, he wrote, "I would say if the village perishes, India too will perish. It will no more be India. His one mission in the world will get lost." Rural Development which is linked with economic growth and social justice, improved lifestyle of rural communities through sufficient social services and fulfilment of basic needs has become vital. The present strategy of rural development mostly concentrates on poverty mitigation, improved employment opportunities, provision of basic amenities and infrastructure facilities through modern programmes. Information & Communication Technology (ICT) is latest tool for rural development. ICT, if used appropriately can be of great benefit for the development at grass root levels [1]. But, the challenge remains with the administration to attract rural masses, mainly the uneducated, to make them aware of new technology which is completely unknown to them. There are different schemes run by the government of India to look after the execution of its rural development programmes. Recent developments in Information and Communication Technology (ICT) have provided surplus prospects for development in every imaginable area. ICT as an enabler has conked out all limits of cost, distance and time [2]. The synthesis of computing and communications, particularly through the internet has abridged the world into global village generating new avenues [3]. Since the dawn of independence, rigorous efforts have been made to perk up the standard of living of rural communities. So, rural development is an inclusive concept of development and poverty eradication has been of principal concern in all five year plans. Rural Development (RD) programmes encompass following for the rural areas:

- Provision of basic amenities & social services; Ensuring agricultural yield;
- Executing programmes for encouraging rural handicraft, rising agriculture productivity, giving employment, etc.; and
- Help to downtrodden families and Self Help Groups (SHG) through credit and subsidy Communication has been recognized as a universal remedy for resolving major social evils and problems. Apart from

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development, introducing communication in the academics for open and distance learning is viewed as step for improving the quality education and filling the social and educational gap. ICT can be used for the betterment of teaching, farming, social alertness, health and hygiene.

## II. ROLE OF ICT IN AGRICULTURE AND HORTICULTURE

Located in the Western Himalayas, is a small hill state of Himachal, whose 90% of population resides in rural hamlets spread across the mountain landscape. The main features of mountain agriculture in the state are small land holdings, inclined subsidiary farmlands and crop growing under rained conditions. Subsistent cultivation in these farmlands remained a leading feature. But, a sign of transition, in the recent years, is stepping forward towards the agriculture diversification. Consequently, the state is nowadays recognized for its fruit and off-season vegetable cultivation [4]

The universities and other research institutions have been able to achieve little in the mandate and execution of research pertaining to agriculture. Focus on evolving specialized capacities for hill oriented R&D perhaps received lesser consideration. This ignorance has another facet ie, the lack of understanding of particular requirements of mountain settings and farming economy. Though the green revolution experience was expanded to hill farming systems, but, the result was inadequate success. Farmer's inconveniences call for holistic line of action where multidisciplinary focus is essential. Farmers in Himachal face a number of problems as:

- Topographical problems
- Lack of infrastructure
- Poor Natural Disaster Management strategies
- Unpredictable weather conditions
- Small and fragmented land holdings
- Insufficient irrigation services
- Post Production Technology
- Pest Management
- Depleted Soils
- Plant nutrition or plant protection
- Storage of food grains

## III. LACK OF INFORMATION & COMMUNICATION

The IT approach for agriculture, horticultural crops or floriculture must address the above problems faced by farmers. Efforts have to be made to tackle the existing and impending problems of agriculture communities by reframing the farming research and extension schemes. To facilitate effectiveness in accomplishing the mandate of recuperating farming and farmer's occupation, certain key changes have been made in research and extension approaches through ICT. In order to achieve this, the farming sector together with government has restructured its research and extension service, integrated its research and extension activities, initiated farmers' needs based research, enhanced the knowledge and skills of hill farmers through ICT. Latest methods in extension education have been initiated to move beyond the Traditional Transfer of Technology (TOT) perception.

ICT has proved to be the best technique for documentation, experiments and analysis of results, in the changing circumstances, the whole course of agricultural research, particularly the recognition of thrust areas of research. Farmers are also concerned and happen to be more eager to know what is happening in the field of agriculture. Farmers have interest in getting information, particularly the contemporary farming techniques to become mentally strong to accept modern farming methods. In Himachal, it is very not easy to get in touch with each and every farmer to disseminate most modern agricultural technology. To overcome this complexity, various mass media are surely most efficient ways to broadcast information to the larger segment of farmers. Until now, among various media, radio, TV, literature and newspapers are most utilized tools to transmit farming technology to rural communities. The Government of Himachal is providing the Mass Media Support to Agriculture Extension. The main purpose of the scheme is to use TV and radio, with their considerable access, as a medium for farming extension. Basically, the scheme is focusing on two initiatives: The first is use of TV for providing agricultural related information and knowledge to farming community. It has two components-narrow casting using high / low transmitters and regional and National Agricultural Programmes in terrestrial mode of transmission. All India Radio envisages the use of FM transmitters to broadcast area specific agricultural programmes six days a week. IT can play significant role in Agricultural Extension System (AES) in planning for future resource documentation and establishing linkage between research and extension.

Agriculture Resource Information Systems and Networking (AGRISNET) is a Mission Mode Project being executed under National e-Governance Scheme of Government of India, Department of Agriculture & Co-operation. Ministry of Agriculture has decisively initiated a Central Sector Scheme entitled, "Strengthening /

Promoting Agricultural Informatics & Communications" of which one component is AGRISNET [5]. The portico of this scheme offers the stakeholders with the facility to use services through an online platform at their door-step. AGRISNET is aimed at developing Citizen Centric Applications thereby making the services accessible to all stakeholders, besides, setting up linkages among all agencies dealing with farming and allied activities for getting better information access and to provide counselling services to the farming societies through use of Information and communication technologies (ICTs). AGRISNET project intends to bring farmers, researchers, scientists and administrators together at common platform by setting-up online information on agriculture, animal husbandry, horticulture and fisheries. This podium provides farmers the chance to online ask question and get the counselling from the experts of concerned area. The main intention of AGRISNET project in the State of Himachal Pradesh is to make a sustainable data bank of all agricultural inputs having entries for all important information pertaining to agriculture and allied activities. The AGRISNET's vision is to make farmers progressive, successful and high-tech. The scheme helps the farming communities in knowing about the soil, crop rotation, types of seeds, fertilizers and pesticides, weather conditions, livestock rearing techniques, package of practices, and enable them to choose which crops to grow and which livestock to raise AGRISNET aspires for improving productivity and profitability of farmers through better advisory systems with well-organized & improved utilization of information by stakeholders. Efforts have been made to connect the offices of agriculture and allied departments through a Network based on HIMSWAN. AGRISNET is improving information access and effective delivery of services to the farming communities by setting up of agriculture on-line. It has the efficient redressal system for grievances of farmers'. AGRISNET has improved communication system among all the offices of the department of Agriculture in the state. It has established linkage between farming communities and policy makers in the state.

## IV. MAIN CHALLENGES BEFORE ICT SECTOR

ICT alone cannot result in rural development. Education is one of the critical problems for use of ICT and people living in the remote areas are still less educated. Contemporary research studies have revealed that education is the primary action for capacity building, which people can utilize. Thus, only introducing the ICTs will not help in meeting the development challenge. For ICTs to be successful, 'education for all must be the main concern. It is important to note that the proportion of the finance involved in utilizing ICT is still very little. The number of people involved in ICT industry, particularly in the rural areas is insignificant. Therefore, an additional priority action, for reaping benefits of ICT to percolate down up to grassroots level as well as add to the rural prosperity, would be the development of rural and village level micro-enterprises. Major power cuts affecting the tribal and rural areas, also hinders the development of ICT. Though the constant power supply setups are used, yet they prove inadequate to cope up with the power failures. Due to tough terrain and topography, there is band-width and connectivity problem. Besides this, resources are not enough to change this scenario. Far-reaching steps are required to bring in development of the ICTs in the rural areas, together with the participation of private sector. There is severe shortage of project director who can ensure the functioning of ICTs at grass root levels. Sorry to say, but most IT professionals are keen in working in urban areas where there are abundant opportunities for their growth. In the lack of 'techno-catalytic' resources, growth of ICT sector, in the rural areas, shows a slow pace.

## V. CONCLUSION

Nowadays, Information and Communication Technology has gained great importance in the field of agriculture. ICT can definitely bridge the gap between economically and technology backward classes and contemporary world, if executed properly. Appropriate education and execution of ICT programmes in easy language which is without difficulty understandable to the rural communities can certainly bring about revolution in development of agriculture in rural areas.

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