Reinforcing Livelihood by Interdependency of HR Capacity-ICT: Relevance to Multi-cropping practice system in Indian Eastern Himalaya

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Abstract. The rural economy of Eastern Himalayan region of India is mostly agriculture based, dominated by traditional as well as community knowledge, has been using as source of livelihood since long years back. But with Green evolution and technological advancement, High Yielding variety of cash crop like Large Cardamom (Amomum subulatum Roxb.) and influence of skill-information-technology are emerging in a great extent respectively only to ensure sustainable livelihood. Since it is seen that only through large cardamom cultivation, it is difficult to ensure sustainability, hence concept of Multicropping is very much demanding. Here, this paper highlights the influence and interdependency of Human Resource Capacity and Information and Communication Technology (ICT) on Multicropping as well as on large cardamom cultivation to ensure sustainable livelihood in this particular region.

Key words: Large Cardamom, Multicropping, ICT, HR capacity building

1. Introduction
Multicropping practice as a part of Agricultural Development in the country like India where more than 121 cr. population is the utmost requirement to challenge sustainability, livelihood and food security. Here the agricultural development talks about all round development i.e. crop pattern, technology skills etc. and it can be understood as transition from cultural historical based rural production and marketing norms to structural farming of small and marginal farmers into a global market through integration [1-5]. In agricultural development information-intensive, knowledge-intensive production and marketing practices are the key elements [5-7]. On the other side, the technological advancement, the Information and Communication Technology (ICT) is introducing a new era in the field of agriculture specially in two broad areas, one is Market Efficiency and the other one is Knowledge Dissemination through mobile devices, remote sensors etc. [5-7], [24-25]. Market efficiency talks about the coordination on agricultural inputs, market information, financial transaction, e-commerce platform etc. whereas the Knowledge Dissemination focus on disseminating knowledge to small and marginal farmers on contemporary technologies which can uplift production practice, food security, sustainability and welfare [5], [7-10]. In the rural economy of Eastern Himalayan region of India, the cultivation of Large Cardamom (Amomum subulatum...
Roxb) as a High Yielding Variety (HYV) of cash crop is much popular as one of the main sources of livelihood [11-15]. But these days due to varied challenging dimensions of land resource, climate, different crop diseases etc. compelling to go for multi-cropping practice along with the interdependency of ICT [16-17],[21],[23-25]. By focusing on Sustainability, it is very high in demand to coordinate among Large Cardamom cultivation along with Multicropping practice, ICT interdependency and Capacity building as only cultivation of Large Cardamom cannot ensure sustainability [1-2],[18],[24],[26]. Due to its high demand both in national and international market, its glamour among the cultivators is still very high [27]. If capacity building on manpower and ICT interdependency goes hands on together in agricultural sector, obviously it will bring a new era after the Green revolution [8], [19-20], [22]. This paper discusses necessity and importance of ICT interdependency along with interdependency of Human Resource (HR) Capacity Building with the objectives: i) To discuss the scenario of large Cardamom cultivation along with Multicropping practice in the region and ii) To discuss the interdependency of ICT as well as Capacity Building of manpower to ensure Sustainability. Here the paper is discussed in four sections, namely 1. Introduction 2. Research Methodology 3. The Case study 4. Conclusion. The first section “Introduction” part contains the current scenario of agricultural sector along with the need of some interdependency of ICT and Capacity building of HR to ensure sustainable livelihood. The “Research Approach” of this study includes Methodology, Study area, sampling and techniques. The Case study section is discussed in i) Current Scenario on livelihood practice in Himalayan region ii) In present context the Small and Marginal farmers’ livelihood practice iii) Importance of ICT and Capacity Building of Manpower for cultivation of Large Cardamom iv) Planned outline reinforcing Livelihood of marginal farmers. The last section “Conclusion” summarizes the discussion of the paper in brief highlighting the future scope.

2. Research Methodology

2.1 Methodology
A qualitative approach is adopted for this research work which comprises both primary as well secondary data. For the collection of primary data, methods and tools that were adopted are structured questionnaire, personal interviews and for data validation purpose personal observation was used. The secondary data were collected from different sources like department of Horticulture, Government of India, spice board journal, annual reports of government of India: Ministry of Small and Medium Enterprises (MSME), Census India 2011, different business news, Ministry of Rural Development, United Nations Educational, Scientific and Cultural Organisation (UNESCO) etc. The combination of both judgement and convenient sampling techniques were used. The sample size for this study was 49 which represent almost 78% of total registered Large cardamom cultivators in Lower Subansiri.

2.2 Study area and sampling
Majority of the respondents which represent 80% of total sample size belong from Yachuli (Zero-II) as the majority habitants are aggressively associated with large cardamom cultivation and very few which represent only 20% of total sample size belong from Zero-I as the habitants are transforming themselves towards Kiwi cultivation gradually. The sample highlights a unique characteristic that involvement of young generation is not found active whereas the registered farmers belong from more than 35 years of age group. Though the farmers are associated with this cultivation from last many years but professional engagement only from last 3-9 years. A new ray is coming among the women who have registered as large cardamom cultivators though its size is small.
3. The Case Study

3.1 Current livelihood practice in Himalayan region

Most of the habitants of Lower Subansiri engage with vegetation of Maize, Pumpkin, Potato, Ginger, Chinese cabbage, Pisciculture along with rice cultivation etc. in large scale through Multicropping practice as major source of livelihood which are completely traditional practice based without any interdependency of ICT. Along with these cultivations almost every household maintain their own kitchen garden as a community practice. The traditional cum manual based cultivation is mostly done by the help of both hired labours as well as family members. Recently the emergence of formalized cooperative farming concept is grazing among the cultivators of Yachuli which can be used in an extensive manner to enhance the value chain in a global market.

3.2 In present context the Marginal farmers’ livelihood practice

The marginal farmers do the Multicropping practice with vegetation and animal husbandry to meet the day to day expenditure but they go for large cardamom cultivation to meet the high demands of life i.e. of education of children and medical expenditure of family members.

![Diagrammatic representation of Existing practice of Livelihood by Marginal Farmers](image)

Figure 1. highlights the traditional farming practice only that are being followed by the marginal farmers to ensure livelihood through Multicropping as well as large cardamom cultivation without any interdependency of ICT and change agent. With the advantage of geographical location and restricted learning from neighbour as well as from local farmers, the habitants go for Multicropping along with large cardamom cultivation. The ultimate production is used for both self-consumption and Commercial purpose as source of their livelihood. But gradually regions’ climatic condition is changing due to slight increase in population, life style etc. Almost all the respondents of marginal farmers agreed and do believe that only to ensure sustainability they go for Large cardamom cultivation. Most importantly the marginal farmers are adopting its commercialization from last few couple of years which is great sign for them as well as for the economic condition of the place.

3.3 Importance of ICT and Capacity Building of Manpower for cultivation of Large Cardamom

The traditional as well as community-based knowledge and information from friends and relatives were the main sources of information based on which cultivation of Large cardamom is done commercially by the marginal farmers. But to sustain in the competitive global market with value chain it is very difficult without enhancing the use of ICT as well as building capacity of manpower on this regard. So, interdependency of ICT and Capacity building of manpower in the form of skill upgradation are the utmost requirements to challenge the global requirements either by the government agencies or by some non-government organisation by considering the gap. As it is coming to know that Government organise some kind of awareness programme on large cardamom cultivation in a very rare scale and some kind of training session only on cultivation process which is not even upgraded one only for the beneficiaries. So here it will be worth mentioning that
interdependency of ICT will enhance the farmers on keeping updated on Market Efficiency like updated agricultural inputs, market information; scientifically proved cultivation practice to get more success and most importantly on financial transactions where farmers lack knowledge. In addition to this ICT helps in Knowledge Dissemination to marginal farmers on contemporary technologies which can uplift production practice. At the same time if capacity building of manpower on those areas, which are already being covered by ICT, are done practically it will enhance the farmers into a such level which will give them the strength to face global challenge.

3.4 Planned outline reinforcing Livelihood of marginal farmers

The existing practice model is not acquainted with ICT as well as with Capacity Building of manpower which make the marginal farmers weaker in accepting the global challenges with value chain. So, all the challenges can be categorised in four broad parts. They are- a) Challenges with the Cultivation i.e. in-depth physiological knowledge about the plant as well as its sapling, its cultivation, plant’s various diseases based on climatic ailment etc. b) Challenges with Manpower Ability i.e. handling technique from plant to supply of raw material which includes acquiring entrepreneurial skill, branding the farmers and their product by themselves, pricing strategy in between etc. c) Challenges with Climatic Condition which talks about the changing pattern of required climate like temperature, rain water, soil pattern, shading pattern, land structure, forestry knowledge etc. d) Challenges with ICT and Capacity Building i.e. how much the marginal farmers are updated with latest Agri- input technologies, latest market information, financial resources and transactions, e-commerce platform etc. with the involvement of local community.

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**Figure 2.** Proposed Planned outline reinforcing Livelihood of marginal farmers

Figure. 2 on Proposed outline on Sustainable Livelihood for marginal farmers is addressing on these issues so that sustainability of marginal farmers can be ensured through the interdependency of ICT and HR capacity building.

The proposed framework is talking about the high level of importance on the interdependency of ICT along with local community knowledge to enhance value chain on each and every stage of cultivation as well as to the stage of final product, and the interdependency of HR capacity building to enhance the ICT in reality through practical utilization in the field of agriculture more specially with the large cardamom cultivation. In short, if ICT and HR capacity building initiative are adopted parallelly
either by Government agencies or by the Non-government agencies with the support of Government or the cooperative farmers group (since it is emerging in the proposed area) all the four mentioned challenges area can be addressed by the marginal farmers through a proper coordination and linkage.

4. Conclusion
This paper has highlighted the importance and influencing capacity of ICT and HR capacity building along with community-based knowledge for agricultural development for sustainability of rural economy. Effective coordination and implementation among the four dimensions of challenges of marginal farmers would help in strengthening the farmers towards the global competition, also can address the sustainability of livelihood through large cardamom cultivation and Multicropping practices in the proposed region with satisfactory result.

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