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Mapping Informal Networks of Mera Gaon Mera Gaurav (MGMG) Beneficiary Farmers in Ri-Bhoi District on Adoption of Climate-Smart Agricultural Practices

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ABSTRACT

Entire dimensions of Agriculture in the world is affected by Climate Change. Dynamics of Informal Social Network Analysis (ISN) analysis enhances in discerning the mechanism of information flow through the agricultural stakeholders and the aspects that expedite or disrupt the flow and promote such information in adoption of Climate Smart Agricultural Practices (CSAPs). The research maps ISN of MGMG beneficiary farmers in Ri-Bhoi district on adoption of CSAPs viz., (1) To map informal social networks of MGMG beneficiary farmers; (2) To study the relationships of informal social networks with individual behaviour of farmers on adoption of CSAPs; and (3) To develop a model on adoption of CSAPs by MGMG beneficiary farmers. The study pursued diagnostic research design and purposive sampling technique. Three MGMG villages viz., Khweng, Lairkhla & Palwi under CPGS-AS and three villages viz., Kdonghulu, Mawbri & Thadnongiaw under ICAR RC for NEH Region had been purposively selected from Umsning C&RDB, Ri-Bhoi, Meghalaya. Ten farmers from each village had been selected by following snowball sampling in order to constitute sixty respondents as sample of the study. The inquiry revealed that the following percentage of 85.00% were in middle age group (35-50yrs), 61.70% were female, 46.70% had primary education, 61.67% were small farmers, 51.67% had low mass media access, 88.34% had low knowledge on CSAPs, and 60.00% belonged to low category of "Adoption behaviour on CSAPs'. The study uncovered that the ISN of respondents of villages viz., Khweng, Lairkhla, Palwi, Kdonghulu, Mawbri & Thadnongiaw had Degree Centrality of 11, 9, 11, 12, 9 & 9; Cohesiveness of 0.444, 0.444, 0.444, 0.444, 0.4000 & 0.422; and Homophily of 0.778, 0.556, 0.867, 0.644, 0.867 & 0.867 respectively.

1. Introduction

Agriculture is a strategic sector, which could meet the challenges on adverse vicissitudes in climate and can reduce GHGs emissions by practicing a set of practices called Climate-smart Agricultural (CSA) Practices. The CSA addresses transmogrifying and re-orienting agriculture and other allied sectors development under the changing realities of CC (Lipper *et al.,* 2014). The CSA has three interlinked pillars namely, (1) Sustainably increasing agricultural productivity and incomes; (2) Adapting and building resilience to CC and (3) Reducing or removing GHGs emissions (FAO, 2015). Despite the benefits of CSA practices and the considerable efforts by several organizations to promote them yet there remain numerous farmers who miscarry to adopt the new CSA technologies. Alongside organizations, farmers are the core part of CSA, and the rate of adoption by Indian farmers particularly, small and marginal farmers is still very low owing to lack of study from perspectives of farmers (Aryal *et al.*, 2017). Individual farmers when faced with climatic risks they prioritize between amongst elements of production, consumption and ecological systems through Social Networks (Osbahr *et al.*, 2010). Such decisions are arrived through formal and informal interactive processes among the farmers and other actors involved in the network. Understanding dynamics on SNA enhance in understanding how information flow through the agriculture stakeholders

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and the factors that accelerate or hinder the flow and utilization of such information in technology adoption in mitigation and adaptation to CC context (Dympep, 2018). Within SNA the Informal Social Network Analysis (ISNA) is a methodology to examine informal social relationships among members of network and behaviour of individuals within social groups and organizations (Clifton and Webster, 2017). When collated with software, it can be used to model, visualize and analyse interactions between and within groups or organizations (Springer and De Steiguer, 2011). Such ISNA give information regarding centrality, cohesiveness, ties among the nodes and extent of similarity of the persons present within the group, thereby formulating a strategy for better intervention and implementation of strategy to meet target for achievement.

2. Materials and Methods

i) Location of Study

The study was conducted in the Umsning Community and Rural Development Block (C&RDB) of Ri-Bhoi district of the state Meghalaya, India.

ii) Sampling Procedure

The scientific inquiry ensued purposive sampling procedure.

iii) Selection of State and District

Owing to the current execution of MGMG programme by the two central institutes under Ministry of Agriculture and Farmers' Welfare, Govt. of India, namely (1) CPGS-AS [CAU, Imphal], and ICAR RC for NEH Region at Umiam – 793 103, Ri-bhoi district of the state Meghalaya, the adduced state and district had been selected purposively for the scientific pursuit.

3. Identification of CSA Practices in MGMG adopted villages of CPGS-AS, CAU, Imphal and ICAR RC for NEH Region

In the present scientific investigation, at the MGMG adopted villages of CPGS-AS, CAU, Imphal and ICAR RC for NEH Region, a total of fifteen CSAPs in four domains have been completely enumerated by seeking referral from the concerned agricultural extension coordinators of CPGS-AS, CAU, Imphal and the Division of Social Sciences, ICAR RC for NEH Region. The identified CSAPs with respect to the domains are depicted in Table 4.2. Pertaining to the domain of (I) 'Crop Production', the following three (1) Cultivation of Stress Tolerant Varieties, (2) Maize-French bean Integrated Farming Systems, and (3) *Aji* System of Cultivation (Cultivation of Rice and Millets alongside rearing of Fish in knee-deep water).Concerning the domain of II. 'Natural Resource Management', the entailing CSAPs had been identified, namely (1). Soil Testing and use of Soil Health Card, (2) Enriched compost prepared on local biomass, (3) Furrow application of lime on acid soils, (4) Rainwater harvesting structures (e.g. Jalkund), and (5) Raised and Sunken Bed technology. Dealing with the domain of III. Plant Protection, the following three CSAPs had been identified as: (1). Biological Pest/disease management, (2) Usage of pest/disease resistant varieties, and (3) Usage of organic pesticides and poison baits. Apropos of the domain IV. Agro-Advisory Services, the entailing CSAPs had been specified as: (1) Information to farmers on scientific crop management practices, (2) Personal field visits to the adopted villages in regular period, and (3) Information on market intelligence, and (4) Linkage of farmers to 1917 Iteams.

4. Summary

A total of fifteen CSAPs in four domains have been completely enumerated. Pertaining to the domain of (I) 'Crop Production', the following three CSAPs had been identified, namely (1) Cultivation of Stress Tolerant Varieties, (2) Maize-French bean Integrated Farming Systems, and (3) *Aji* System of Cultivation. Concerning the domain of II. 'Natural Resource Management', the entailing CSAPs had been identified, namely (1). Soil Testing and use of Soil Health Card, (2) Enriched compost prepared on local biomass, (3) Furrow application of lime on acid soils, (4) Rainwater harvesting structures, and (5) Raised and Sunken Bed technology. Dealing with the domain of III. Plant Protection, the following three CSAPs had been identified as: (1). Biological Pest/disease management, (2) Usage of pest/disease resistant varieties, and (3) Usage of organic pesticides and poison baits. Apropos of the domain IV. Agro-Advisory Services, the entailing CSAPs had been specified as: (1) Information to farmers on scientific crop management practices, (2) Personal field visits to the adopted villages in regular period, and (3) Information on market intelligence, and (4) Linkage of farmers to 1917Iteams.

Table 4.2: Identified CSAPs in respective domains of 'Crop Improvement', 'Natural Resource Management' &'Plant Protection and Agro-Advisory Services'.

S.No.	Domains	Identified CSAPs
I	Crop Production	Cultivation of Stress Tolerant Varieties
		Maize-French bean Integrated Farming System
		Aji System of Cultivation (Cultivation of Rice and Millets alongside rearing of Fish in knee-deep water)
II	Natural Resource Management	Soil Testing and use of Soil Health Card.
		Enriched compost prepared on local biomass
		Furrow application of lime on acid soils
		Rainwater harvesting structures (e.g. *Jalkund*)
		Raised and Sunken Bed technology
III	Plant Protection	Biological Pest/disease management
		Usage of pest/disease resistant varieties
		Usage of organic pesticides and poison baits
IV	Agro-Advisory Services	Information to farmers on scientific crop management practices
		Personal field visits to the adopted villages in regular period
		Information on market intelligence
		Linkage of farmers to 1917iTEAMS

5. Conclusion

The study concludes by recommending the following two crucial and strategic arguments based on the scientific findings in the inquiry.

- Information seeking and sharing of CSAPs by farmers in domains of CI, AAS, NRM and PP within the six MGMG adopted villages of CPGS-AS, CAU, Imphal and ICAR RC for NEH Region were very similar.
- Innovation on CSAPs did not disseminate nimbly in a homophilous ISN of farmers.
- Different ordinals of eight predictor variables *viz.,* 'Age', 'Gender', 'Education', 'Operational Land Holding', 'Annual Income', 'Farming Experience', 'Mass Media Access' & 'Knowledge on CSA Practices' indeed influenced/enhanced in the outcome of being Low, Medium and High ABCSAP.

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