



Evaluation and refinement of community approaches in coconut technology transfer

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Abstract

Evaluation on the performance and sustenance of coconut clusters revealed better group characteristics and capacity development in the case of clusters facilitated by Central Plantation Crops Research Institute (CPCRI) and Coconut Development Board (CDB) and their performance also were rated as good against the objectives set. Even though the performance of the rubber producers' group was the highest among all, the present status of the coconut groups facilitated by CPCRI and CDB are highly encouraging in terms of their performance, increased knowledge, skills, improved behavioural changes and their strong and responsible leadership, being in the early period of development. Further, the coconut groups have several limitations like unorganized markets, inadequate government support limited to project periods and lack of a permanent establishment and infrastructural facilities for storage and processing, unlike the well established commodity clusters. Based on the inferences drawn, an integrated model coconut cluster at the panchayat level by linking the ward level coconut clusters through a common support centre with continued government support for input use and marketing for effective functioning and sustenance is suggested.

Keywords: Community approaches, evaluation, model coconut cluster, performance, sustainability

Introduction

Currently, the development programmes implemented at regional, national and global level are community-based and participatory in nature and this approach has more relevance to the coconut farmers of Kerala with a per capita availability of less than 0.2 ha of coconut holding. Several agencies like Central Plantation Crops Research Institute (CPCRI), Coconut Development Board (CDB), State Agricultural Department, Local bodies and NGOs implemented various programmes based on this approach and succeeded in bringing out significant results in terms of immediate physical and financial outcome.

Sustainable Coconut Based Farming System model implemented through Community-based Organizations (CBOs) positively influenced expected total household income and food security at the global level with clearest impacts in countries like India and Philippines under a collaborative project involving 11

coconut growing countries with the support of COGENT / IFAD (Policy Brief, 2009). CDB has implemented a cluster programme in seven states to reduce cost of production, value addition and for improving the coconut processing methods, benefiting 80,000 farmers (Minnie Mathew, 2010). According to Thomas Mathew (2009), the cluster programme of CDB is not merely as a farm management arrangement but a special purpose vehicle for transforming traditional subsistence coconut farming into economically viable coconut based farming systems with possible innovations for adoption of secondary agriculture, which resulted in an increase in farm productivity and benefited in a long way to enhance the value of the produce to more than 70 %.

Even after attaining clear and visible impacts, several of the clusters/communities are facing challenges in terms of sustainability of the technologies as well as promotional efforts on withdrawal of external support. The present study was aimed at analyzing the

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characteristics of coconut communities/clusters, their performance and the factors associated with performance and sustainability so as to refine the community approaches and to formulate a "model coconut community".

Materials and Methods

Selected 20 farm clusters including 16 coconut clusters and 4 commodity clusters / rural farm clubs for evaluating the performance and other characteristics of the groups. Out of the 16 coconut clusters, 12 were CDB facilitated coconut clusters, 3 State Agricultural Department facilitated coconut clusters (Kerasree) and one CPCRI facilitated coconut cluster. As there were no coconut clusters sustained and well established for a long time, the functioning of one each of Vegetable and Fruit Promotion Council, Kerala (VFPCCK) facilitated vegetable cluster, State Agricultural Department facilitated vegetable cluster (Harithasangham), Rubber Board facilitated Rubber producers' cooperative (RPC) and rural farm club (RFC) were studied to have a comparison on the factors related to performance and sustainability. Among the coconut clusters, 5 were from Alappuzha, 7 from Ernakulam and 4 from Kollam. The other four commodity groups were from Alappuzha District. Data was collected using a pre-tested questionnaire through direct interview and Rapid Rural Appraisal (RRA) technique. Group characteristics, group capacity and group performance were recorded for each group using different scoring procedures and measurement techniques developed for the study. XLSTAT 2010 was used for data analysis and the association between various factors and performance were worked out using Spearman correlation. The scoring procedure for measuring the performance indicators and the factors associated with performance are provided in Table 1.

Results and Discussion

Performance of clusters / groups

The performance of groups were measured in terms of various indicators and compared the total score for each of the clusters / groups (Table 2).

Among all groups, the rubber producer's group performed better in terms of organized marketing and their efficiency to cater to the requirements of farmers from planting materials up to procurement of products and realization of profits. Even though there is less financial support for inputs and planting, the well organized marketing and other welfare support provided by VFPCCK helped the vegetable groups in achieving good

Table 1. Scoring procedure of group performance indicators and factors associated with performance

Performance indicators / factors	Scoring procedure			
Collective procurement / distribution of inputs	By group (3)	Group facilitated by impl. Agency(2)	Individual basis (1)	
Linkage with R&D	High (3)	Medium (2)	Low (1)	
Infrastructure facilities	For production, processing & marketing (4)	For any two (3)	For any one (2)	No facility (1)
Collective marketing	Organized (3)	Unorganized (2)	Absent (1)	
Fulfillment of objectives	< 25% (1)	25-50% (2)	50-75% (3)	>75% (4)
Knowledge acquisition	High (3)	Medium (2)	Low (1)	
Perceived improvement in productivity	< 25% (1)	25-50% (2)	50-75% (3)	>75% (4)
Perceived increase in farm income	< 25% (1)	25-50% (2)	50-75% (3)	>75% (4)
Empowerment	(Group capacity + income enhancement) Group capacity <10 (1), 10-20 (2), 20-30 (3), >30 (4) + income enhancement score			

Table 2. Comparison of performance of various groups in terms of different indicators

Performance indicators	CDB	Kera sree	CPCRI	VFPCCK	Haritha sangham	RPC	RFC
Fulfillment of objectives	3	1	4	4	3	4	3
Acquisition of knowledge / skills	3	1	3	3	3	3	3
Perceived improvement in productivity	2	1	2	3	3	4	3
Perceived improvement in income	3	1	4	4	4	4	4
Empowerment of groups	7	3	8	8	7	7	8
Total performance	18	7	21	22	20	22	21

performance. The performance of rural farm clubs as well as CPCRI and CDB facilitated coconut clusters also were rated as good against the objectives.

Factors associated with performance of coconut communities

a. Group Characteristics

Most of the coconut groups and commodity groups were registered, having an action plan and guidelines for operation except for those facilitated by the State Department of agriculture. Groups like rural farm clubs and Harithasangham had less than 50 members, whereas all other groups had 100 - 400 members, with subgroups for effective functioning. The relationship between

different group characteristics and performance was studied and the correlation coefficients are presented in Table 3.

Table 3. Relationship between group characteristics and performance

Variables	Operational guidelines	Operational area	Contiguous / scattered	Group size	Performance
Operational Guidelines	1.000	-0.730**	-0.063	-0.289	0.449*
Operational Area		1.000	0.446*	0.626**	-0.073
Contiguous/Scattered			1.000	-0.096	0.685**
Group Size				1.000	-0.379
Performance					1.000

* Significant at 5% level ** Significant at 1% level

A larger group size, even though not significant was found to be negatively correlated with group performance. Sanginga (2003) also found that larger farmer research groups had lower participation rates, higher rates of drop out and a large number of inactive members, which adversely affected group performance and cohesion. Agarwal and Goyal (2001) and Place et al. (2004) reported a concave relationship between group size and collective action performance, indicating that medium size groups perform better. All coconut groups comprised of contiguous area, whereas the commodity groups and rural farm clubs comprised of scattered individuals, who were the real practicing farmers with major livelihood as agriculture. Performance of groups having scattered individuals performed better than contiguous groups and the correlation was significant. However, considering the peculiarities of coconut holdings and operational convenience, the coconut groups can be contiguous, medium in size and with sub groups for achieving better performance.

b. Group Capacity

Group capacity is measured in terms of various indicators and the comparison between different groups in terms of the indicators as well as total group capacity is provided in Table 4.

Better group capacity in terms of community cohesiveness, conflict resolution and collective action for community welfare was recorded in case of rural farm clubs as well as CPCRI and CDB facilitated coconut clusters. The present status of the coconut groups facilitated by CPCRI and CDB are highly encouraging in terms of increased knowledge, skills, improved behavioural changes and their strong and responsible leadership, even though they are in the early period of development compared to other commodity groups. All

Table 4. Comparison of group capacity in terms of various indicators

Indicators	CDB	Kera sree	CPCRI	VFPCK	Haritha sangham	RPC	RFC
Community cohesiveness and commitment	3	1	3	1	2	1	4
Contribution for community welfare	2	1	3	2	2	3	4
Leadership	4	2	4	4	3	4	4
Improvement in awareness/knowledge	3	2	3	3	3	4	3
Increased skills	3	1	4	3	3	4	3
Behavioural changes	4	1	4	4	3	2	3
Decision making	4	1	4	3	3	3	4
Participation in meetings	4	1	4	4	2	4	4
Collective action for community welfare	4	1	4	4	3	1	4
Conflict resolution and accommodation	3	1	3	3	3	1	4
Total group capacity	34	12	36	31	27	27	37

Scoring : Very High (4), High (3), Moderate (2), Low (1)

well-performing groups were managed under efficient leadership with transparency in management and accounts as well as in the conduct of regular meetings. Moreover, cohesiveness between members and family involvement were more in coconut groups and as such they could fulfill more of food and nutritional security needs. But the highest improvement in knowledge and skills on a wider scale was attained by the rubber producers group due to the continuous technical and financial support.

The association among various capacity indicators and association of each of the indicator with total group capacity and performance were worked out and presented in Table 5.

Capacity indicators like contribution for community welfare, leadership pattern in the group, improvements in awareness, knowledge and skills, decision making ability, extent of participation in meetings and capacity of the group in resolving the conflicts were found to be significantly and positively influencing the performance of the group, while the total group capacity had a non-significant relationship. Even though group cohesiveness and collective action did not have a direct association with performance, their relationship with conflict resolution and decision making were significant, which may indirectly contribute to better performance. Sanginga (2003) also reported financial contribution by groups as one of the indicators group sustainability and found that groups with high levels of performance had developed some rules for financial contributions. It was also found that the successful farmer

Table 5. Association between group capacity indicators, total group capacity and performance

Capacity indicators	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.000	0.524*	0.238	0.313	0.323	0.536*	0.577**	0.603**	0.682**	0.691**	0.146
X2		1.000	0.632**	0.616**	0.623**	0.523*	0.677**	0.471*	0.562*	0.731**	0.613**
X3			1.000	0.725**	0.603**	0.724**	0.745**	0.380	0.590**	0.772**	0.616**
X4				1.000	0.730**	0.525*	0.761**	0.358	0.501*	0.593**	0.585**
X5					1.000	0.529*	0.766**	0.489*	0.502*	0.521*	0.754**
X6						1.000	0.753**	0.516*	0.744**	0.813**	0.507*
X7							1.000	0.711**	0.715**	0.755**	0.581**
X8								1.000	0.772**	0.663**	0.329
X9									1.000	0.801**	0.527*
X10										1.000	0.397
X11											1.000

X1: Cohesiveness

X2: Community contribution

X3: Leadership

X4: Improved awareness / Knowledge

X5: Improved skills

X6: Decision making

X7: Participation in meetings

X8: Collective action

X9: Conflict resolution

X10: Total group capacity

X11: Performance

* Significant at 5% level

** Significant at 1% level

research groups were those having local commitment to collective action and strong social capital.

c. Other factors associated with performance of groups

Several factors other than group characteristics and group capacity were studied for their association with performance and sustainability of groups and remarkable difference was noticed in the government support received by various groups and is presented in Table 6.

Table 6. Support from Government / facilitating agencies

Type of support	CDB	Kera sree	CPCRI	VFPCCK	Haritha sangham	RPC	RFC
Monetary	2	1	2	3	2	3	1
Technical	2	1	2	3	2	3	1
Infrastructural	1	0	2	2	0	3	1
Total	5	2	6	8	4	9	3

Scoring: Sustained support - 3, Support for establishment alone - 2

Occasional support through schemes - 1, No support - 0

All the commodity groups have regular financial, technical as well as infrastructural support from the facilitating agencies / Government, whereas it was provided to the coconut groups only during the initial years of establishment. The rubber producers' cooperatives support the farmers from planting to profit realization, while the VFPCCK helps the vegetable groups in well organized marketing and other welfare measures.

In addition to the government support, various other factors were also studied for their association with performance and are given in Table 7.

The role of the group/extension agencies during different stages of development play an important role in the sustenance of the group. Tu Hoang and Doug Graham (2006) suggested that participation of extension officers should reduce as the groups develop and mature and their roles should be clarified to avoid overlapping with the group leaders. In this study, it was found that greater role by group in collective procurement of inputs and problem solving were individually significant in deciding the performance of the group, while the collective role of the group in general was found to be non-significant. Other aspects like support from government, infrastructural facilities, collective marketing and empowerment of the group were found to be significantly related to the performance in the present study as well as in other studies. The correlation coefficients clearly revealed the importance of rural infrastructure in collective marketing, which in turn was influencing the empowerment and performance of the groups. Jerry *et al.* (2009) found that continued external funding was certainly useful in keeping the momentum of the clusters going but the sustainability of farmer groups remained dependent on leadership development, farmer empowerment, continuing perception of net benefits as far as members were concerned, and local control. Helen and Ruth (2009) reported that collective action for marketing purposes can enable smallholders to overcome multiple market imperfections and to enable farmer groups to access profitable markets, certain "basics" like improved rural infrastructure, facilitating extension services and accessibility of credit markets are crucial. All the studies highlight the need

Table 7. Association between various factors and performance

Variables	X1	X2	X3	X4	X5	X6	X7	X8	X9
X1	1.000	0.790**	0.632**	0.456*	0.679**	0.375	0.394	0.728**	0.675**
X2		1.000	0.786**	0.350	0.647**	0.260	0.371	0.621**	0.530*
X3			1.000	0.374	0.763**	-0.125	-0.138	0.377	0.186
X4				1.000	0.471*	0.413	0.390	0.550*	0.605**
X5					1.000	-0.012	-0.016	0.446*	0.366
X6						1.000	0.937**	0.647**	0.783**
X7							1.000	0.667**	0.798**
X8								1.000	0.939**
X9									1.000

X1: Collective procurement of inputs

X2: Problem solving

X3: Total role of group

X4: Govt. support

X5: Linkage with R/D

X6: Infrastructural Facilities

X7: Collective marketing

X8: Empowerment

X9: Performance

* Significant at 5% level

** Significant at 1% level

for strengthening of infrastructure for processing and collective marketing with a sustained government support for effective functioning and sustenance of clusters.

Constraints and Potentials of clusters

The major constraints faced by the coconut groups include unorganized markets, inadequate government support limited to project periods and lack of a permanent establishment and infrastructural facilities for storage and processing. Other challenges include lack of initial operational funds, scarcity of skilled workers, difficulty in community mobilization of labour and working capital and higher charges of electricity for small scale units. Swapna and Thomas (2009) also reported lack of proper marketing facilities for the produce, inadequate income generated from agriculture, non-availability of traditional climbers and skilled labour and incidence of pests and diseases as the major constraints while implementing the cluster development programme of CDB in Alappuzha District.

Potentials of coconut groups were the opportunity for collective procurement of inputs, decentralized availability of critical inputs, easy access to technologies and extension support by disadvantaged groups like women / marginal farmers, common understanding of existing management gap in coconut cultivation and easy mobilization of resources and utilization of community assets.

Characteristics of sustained groups and technologies

Sustained groups are those:

- Linked by market related advantages.
- With sustained Government/external support.

- With permanent establishment and infrastructural facilities.
- Having established rules and action plan for group operation.
- Having manageable group size and area of operation.
- Which acquired high group capacity in terms of increased knowledge, skills and improved behavioural changes.
- Having powerful and responsible leadership based on common interest principles.
- Assuming greater role than facilitator during the implementation and later stages of development.
- Having transparency in group management and accounts.
- Who convene regular meetings of the members

Sustained technologies are those:

- Compatible with existing practices
- Suiting to socio-cultural needs and demand in the local market.
- Which are simple and easy to adopt.
- Which are cost effective.
- Having visibility of results.

Inferences

- Most of the coconut clusters lacked market related advantages in general, with markets being unorganized in most of the cases. Organized marketing through a support centre with government facilitation and incentives is highly essential in sustaining the performance of the coconut clusters.

- Almost all the coconut clusters lack a permanent establishment and infrastructural facilities. As the results of the study clearly revealed a significant association between infrastructural facilities, collective marketing, empowerment and performance, it is suggested to devote a minimum of 25 % of the project cost for establishing a common support centre for linking all the clusters in a panchayat and for developing other infrastructural facilities.
- Government/external support is obtained for the coconut clusters only during project period of 2-3 years, which is too short for them to attain sustainability. Continued incentives for input use and delivery of market products can promote the sustenance of the clusters as in the case of other commodity groups which are well sustained.
- The groups can be medium sized with 100-150 members and having an operational area of about 25 ha, which can be contiguous for operational convenience.
- Strong and responsible leadership based on common interest principles was observed in more

than 75 % of the groups and most of them possessed high management capacities and transparency in dealings and accounts. All such groups had well defined operational guidelines, regularly conducted meetings and maintained cohesiveness between members. All the above management aspects should be strengthened and sustained in the well-performed clusters and encouraged in the poorly performed ones, along with the refinements suggested.

Based on the inferences, the need for bringing the coconut clusters under a common umbrella at panchayat level was realized for the facilitation of input use and collective marketing. Thus, an integrated model coconut cluster (Fig. 1) was developed with emphasis to a cluster support centre for all the clusters coming under a panchayat so as to facilitate the production, processing and marketing aspects of coconut and intercrops.

The model can be operated in a Participatory Action Management (PAM) mode with production/market linked incentives. As we have a homestead system of farming in Kerala, this model will be ideal,

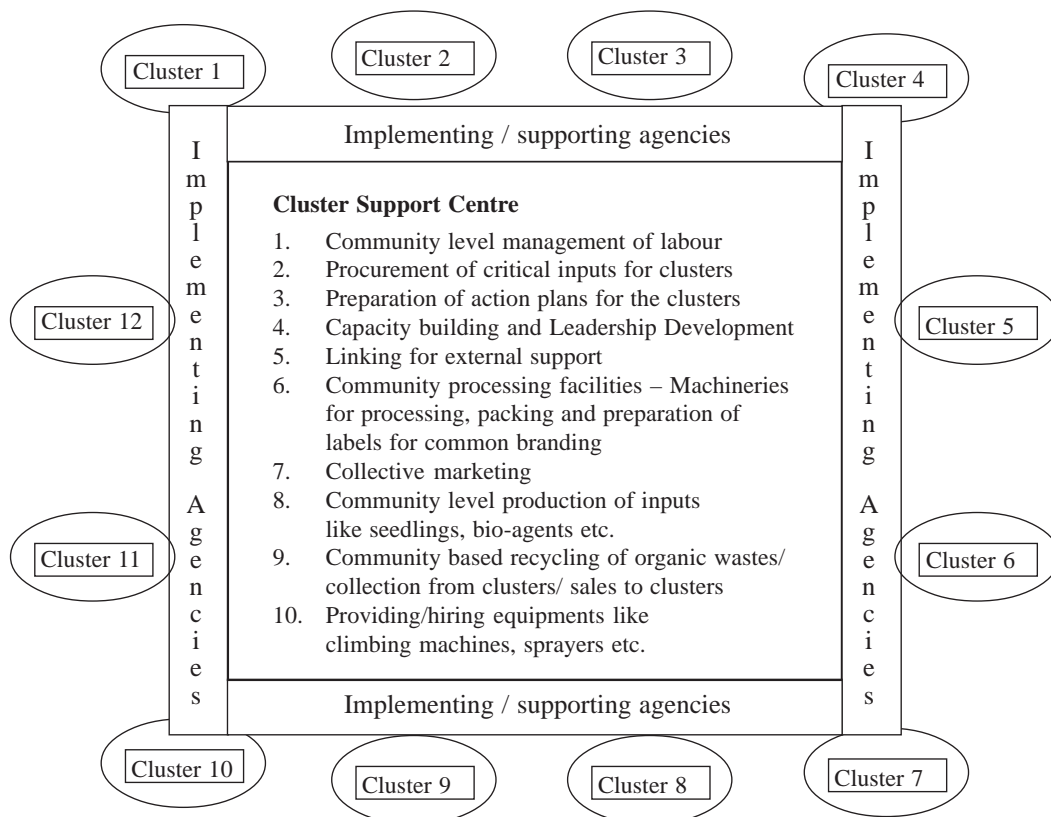


Fig.1. Structure of the Integrated Model Coconut Cluster

as it holds immense opportunity for clustering small holdings for collective operations and to accommodate maximum possible crops and allied enterprises for deriving maximum income from each of the holdings.

Conclusion

In spite of having several constraints, the performance of the coconut clusters facilitated by CPCRI and CDB are encouraging, even in the early period of development. But most of these clusters were handicapped with lack of a permanent establishment and organized market structure, which are the essential pre-requisites for sustaining the groups. The role of the group in procurement of inputs and problem solving was found to be associated with performance of the group, while collective action and group cohesiveness were not found to have a direct relationship. But, other factors like government support, presence of a permanent establishment, infrastructural facilities and an organized marketing network were found to have a greater role in sustaining the performance. Hence, this paper suggests for an integrated model coconut cluster at the panchayat level by linking the ward level coconut clusters through a common support centre with continued government support for input use and marketing for effective functioning and sustenance. The innovative management approach suggested and participatory documentation of the sustainability issues under this study can be utilized by the development agencies dealing with coconut development.

References

- Agarwal, A. and Goyal, S. 2001. Group size and collective action: third party monitoring in common-pool resources. *Comparative Political Studies* **34** (1):6393.
- Helen, M. and Ruth, M. 2009. Collective action for smallholder market access. CGIAR System-wide Program on Collective Action and Property Rights. *Policy Brief Number 6*. www.capri.cgiar.org.
- Jerry, J., David, N. and Stan, F. 2009. Enhancing sustainable agriculture through farmer groups: The experience of the Kansas Sustainable Agriculture Series, Paper **4**: 1-14. <http://www.kansassustainableag.org/Library/ksas4.htm>.
- Minnie Mathew.2010. Coconut exports to US, Euro zone rise 30%. *The Hindu Business Line*: 30 April, 2010.
- Place, F., Kariuki, G., Wangila, J., Kristjanson, P., Makauki, A. and Ndubi, J. 2004. Assessing the factors underlying differences in achievements of farmer groups: methodological issues and empirical findings from the highlands of Central Kenya. *Agricultural Systems* **82** : 257-272.
- Policy Briefs. 2009. The International Coconut Genetic Resources Network (COGENT). <http://www.cogentnetwork.org>.
- Sanginga, P. 2003. Farmer research group dynamics in Eastern Africa. *Highlights: CIAT in Africa*. No.8. www.ciat.cgiar.org.
- Swapna, S and Thomas, E.K. 2009. Impact assessment of cluster approach in integrated coconut management. *Indian Coconut Journal* **52**(7): 8-14.
- Thomas Mathew, M. 2009. Dynamism returns to coconut farming. *Indian Coconut Journal* **52**(7): 2-7.
- Tu Hoang and Doug Graham. 2006. Farmer interest groups: Factors influencing their sustainability and the involvement of extension agencies. In: *Practice change for sustainable communities: Exploring footprints, pathways and possibilities* - Pacific Extension Network International Conference, Beechworth, Victoria, Australia . <http://www.regional.org.au/au/apen/2006>.