



## A STUDY ON DIFFERENCES IN SELF HELP GROUPS MICRO CREDIT BETWEEN YEARS AND SITES IN THE CUDDALORE DISTRICT, SOUTHERN INDIA

**\*Seetharaman Lawenya & G. Ganesan**

Department of Commerce, Periyar Government Arts College, Cuddalore – 607 001, Tamilnadu, India

\*Corresponding author: email: lawenyumohan@gmail.com

### ABSTRACT

We evaluate the differences in SHGs micro credit between different years and sites in the Cuddalore district, Tamilnadu in southern India. We collected data from five sites of SHGs groups from Cuddalore district namely, Annagramam, Cuddalore, Keerapalayam, Kurunjipadi and Panruti during the financial years 2000-2005. We tested the mean differences between number of SHGs, revolving fund and banks loans over six consecutive years 2000-2005 at different sites. We used ANOVA to find the significant differences between years and sites. We identified 3242 SHGs, consisting of 68322 members using 2994 saving accounts and bank loans totaling approximately Rs.14, 29, 890 lakhs. Our results showed that the number of SHGs increased significantly over the studied years, through this effect, revolving fund and bank loans also increased significantly in most years. However, number of SHGs, revolving fund and bank loans did not differ significantly among different sites. Our findings suggest SHGs get financial assistance and beneficial increases depending upon the number of SHGs groups. Therefore, we recommend establishing more SHGs as this can increase the revenue resources available to women and improve their wealth status.

**KEYWORDS:** Bank loans, Economic benefits, Revolving fund, Women Empowerment

### INTRODUCTION

It is recognized that Self Help Groups (SHGs) play a vital role in empowering people particularly in rural areas of our country; there is a silent revolution made by the SHGs to uplift the economic empowerment of women. Further, the SHGs play an important role in providing opportunities for women to gain knowledge, confidence and skills to find better employment and economic support. Since the overall empowerment of women is crucially dependent on economic empowerment, these SHGs are extremely important as they generate income and employment to build women's empowerment. The SHGs enhance the earning capacity of women by between 25 to 35 percent. This enhancement ensures social effectiveness and economic independence, which can in turn uplift their economic status.

The self-help groups provide the benefits of economies of scale, cost effective alternatives to other financial services, collective learning, democratic and participatory culture, a firm base and platform for dialogue and co-operation. Moreover, the benefits of self-help groups are based on co-operation rather than competition. Moreover, the self-help groups strategy aims to targeting women in poverty reducing initiatives is proliferating through many new initiatives, such as the India Rural Women's Empowerment Projects. It aims to empower the poorest rural women through SHGs that influences increasing control over resources, developing income-generating schemes, improving management and

technical skills. It has been gaining access to credit and social services in order to alleviate poverty and generate employment among rural areas particularly at village levels. The Indian government has established a sector called the National Bank for Agricultural Research and Development (NABARD) which is dedicated to assisting SHGs groups. NABARD is set up as a development bank with a mandate to facilitate credit flow for the promotion and development of agriculture, small-scale industries, such as, cottage and village industries, handicrafts and other rural crafts. It also has the mandate to support self-help groups and all other allied economic activities in rural areas, to promote integrated and sustainable rural development and, by so doing, secure the prosperity of rural areas.

### MICRO LEVEL ACTIVITIES OF SELF-HELP GROUPS

The SHGs members of the sample blocks and in particular women show considerable self-confidence through their ability to start and run micro enterprises. Their activities in these groups include making paper cups and paper plates out of biomass, tailoring, screen-printing, mat making, making sculptures and other ornamental articles, making greeting cards, and knitting plastic wire baskets and making dolls and spoons using locally available coconut shells as, raw materials. They also prepare household products such as pickles, appalam and phenyl etc.

In addition the innate thrift often displayed by economically disadvantaged women is often a good entry point and binding force for poor women in SHGs. They view their future in their savings, the savings which meet their immediate needs, and also provide security for their old age. The savings of an individual may not be sufficient to meet her needs but all the savings of the group members put together can be of great help to one or two members of the group. In an effective SHG, the credit operations start at the end of a month when the members' pool together their savings and sanction a loan to a needy member. Every group will have its own set of rules and regulations determining the amount of savings required by its' members, interest rate on the savings, the basis on which loans are to be prioritized, the amount of interest on their loans and penal interest on any defaulted amount. Finally, the availability of credit is often the basic requirement to any citizen, more so, to a poor person. Therefore credit should be timely as well as easily available as can be delivered through SHGs.

### **SELF-HELP GROUPS ARE A SUITABLE APPROACH TO ECONOMIC DEVELOPMENT**

Experiments in various developing countries have proved that poorer citizens can be helped by organizing them into small self-help groups. To influence the core of poverty; women are the best agents. Hence women self-help groups (SHG) have become a ray of hope to developmental practitioners. A typical SHG constitutes 10-15 like-minded poor women living below the poverty line. Often the women belong to neighborhood communities, sharing thoughts and problems with one another and form into a SHG. Members of SHGs save equal amounts as decided in their groups. The movement of SHGs started with the slogan 'save a rupee a day'. Of course there are a number of groups today who are saving more than Rs.40/- or Rs.50/- a day.

### **STARTING OF SELF-HELP GROUPS**

Once the like-minded members come together, they open an account in either a bank or post office in the home area of the group. The group authorizes any of the members (elected as group leaders) to operate the group amount. Every group decides the frequency of group meetings and when and where to hold a meeting. Effective SHGs usually meet once a week, however a SHG should meet at least once a month. The frequency of meetings has been found to strengthen the group processes with a higher frequency increasing their effectiveness. Effective groups exercise their discipline through fining the absentee and late coming members.

Thrift as well as credit operations take place in the groups meetings. The meetings have specific agenda and the discussions go as per the agenda. A poor women coming out of her house and attending the meeting as a stake holder is a major step towards empowerment. In the meetings various issues are discussed at length and members decide who should be given the loan. The discussions take place in a democratic and transparent manner. In effective SHGs, each meeting is presided over by a different member in rotation and this helps to impart leadership qualities to all the members.

Additionally, accounts are written for each meeting. The standard account includes an analysis of the attendance register, savings and loan ledger, cash book and individual pass books. The accounts are written either by members themselves or by a person employed by the SHG. The best practice for managing SHGs are evolving continuously as based on the shared experiences of the group a few of which are examined below.

### **SELF-HELP GROUP AND STAGES OF EVOLUTION**

- **Group formation:** At this stage, groups are formed, developed and strengthened to evolve into self-managed people's organizations at the grassroots level.
- **Group stabilization:** Through thrift and credit activity among the members and building their group corpus - the group takes up internal loaning to the members from the corpus.
- **Micro credit:** The group corpus is supplemented with Revolving Funds sanctioned as cash credit limited by the balks to livelihood.
- **Micro enterprise development:** At this stage the group undertakes autonomous activity of its choice for income-generation.

Micro-credit programs focus on organization of the rural poor at the grassroots level through a process of social mobilization which enables the poor to build their own organizations (SHGs) consisting of 10-20 persons. In which they participate fully and directly and take decisions on all issues concerning poverty eradication. Therefore, people forming SHGs are free from financial difficulties since they have arranged themselves for micro credit financing.

### **THE IMPORTANCE OF MICRO CREDIT**

Microcredit aims to extend access to credit to the poor, especially poor women, in order to generate income for participants and their families (Mohindra *et al.*, 2008). SHGs were designed as a poverty alleviation strategy and as a means to increase women's access to resources and decision-making powers. The limitations of the formal financial sector in extending credit to beneficiaries to enable employment opportunities has led to the evolution of the programme of micro credit with the objective of providing the poor timely and hassle-free credit without demanding any collateral. Important aspects of microcredit in an individual SHG include: harmony among the group members, cohesiveness in the group and group pressure in determining a repayment schedule. It ensures prompt and faultless repayment and supervision of co-borrower's activities in the system. As a result, during the 1990s, micro credit programs emerged as one of the mainstream development interventions to address poverty alleviation and to help women's empowerment in developing countries (Hashemi *et al.*, 1996; Amin *et al.*, 1998; Kabeer, 1998; Wright, 1999; Mohindra *et al.*, 2008).

Micro credit for Self-Help Groups (SHGs) is fast emerging as a promising tool of promoting income generating enterprises for reaching the 'unreached' for credit delivery in rural areas. This is especially so for women who are often

considered to have a very low net worth and thus cannot often avail themselves of any traditional credit from formal financial institutions. Micro credit is also considered as a vehicle for achieving empowerment of women, in many spheres of their social, cultural, political and economic life. It is a way of self-sustenance without looking for financial help or subsidy from elsewhere (Jayaraman 2005).

Micro credit delivers loans to occupations such as vegetable vendors, roadside retailers (e.g. grocers), rickshaw pullers (etc.) and aids small industries including agriculture, piggyery, fishery poultry, and cattle rearing and so on. Micro credit has its origins in the early eras of civilization. In order to expand industry and commerce it was out of necessity people often became aware of the benefits of lending and borrowing. Much before the advent of sophisticated money and banking systems, the practice of lending was prevalent using in kind repayment or small scale monetary units.

### **ECONOMIC BENEFITS**

The condition of households in a self-help member group is significantly better in regard to access to savings and credit facility. As for acquisition of productive assets, a relatively larger proportion of households from the member group have acquired livestock and land as compared with those in non-SHG comparison groups. Most of the households in a self-help member group have access to more than two livelihood sources, and are earning higher income leading to a favorable impact on their acquisition of consumer durables and expenditure on food, education and health. While micro-finance programs have a positive impact on member households, there are often differences across the project areas. Cuddalore district is one of the economic backward district in Tamilnadu, many of the women lacks economic resource and they are highly depends only on agriculture revenue generation. However, the knowledge of SHGs group among these areas are limited in available. Thus, they study focused on the availability of SHGs and annual turnover of SHGs groups among these areas. The main objectives of this study were: (1) To record the number of SHGs operating and examine their financial assessments (2) To determine how the revolving fund and bank loans of the SHGs varied between yearly intervals (3) to determine how the revolving fund and bank loans of the SHGs varied among different sites.

### **METHODOLOGY**

The study was conducted at five sites in the Cuddalore district of Tamil Nadu. Primary and secondary data have been used to collect accurate information from SHGs working in the five sample sites.

Questionnaire and interview methods were used for the SHGs in the Annagramam, Cuddalore, Keerapalayam, Kurunjipadi and Panruti sample sites. These questionnaires were used to obtain information on the nature of the work done and types of training given to them, financial assistance granted to the members, micro credit financing facilities available to them, marketing facilities arranged for their products and their business accomplishments etc.

Both group interviews and interviews at an individual level were conducted for each SHGs. Additional observational recordings were used as and when conditions were favorable. The various avenues of financial assistance in order to operate business activities were also identified for the sample respondents in the villages.

The study period was confined to the six financial years 2000 – 2005 inclusive. During the six-year period, periodical data was collected from the individual SHGs' records.

### **DATA ANALYSIS**

The collected data are presented in tables and these tables were systematically analyzed with the help of simple statistical tools such as percentage, average etc. However, all mean differences were analyzed with ANOVA and Type III sum errors to find the significant differences between different years and sites. Year and site-wise mean comparison of SHGs, revolving fund and bank loans were also tested using Analysis of variance (ANOVA).

### **RESULTS AND DISCUSSION**

A total of 3242 SHGs were recorded from the five studied sites. These SHGs were found to represent a total of 68322 members. In addition these SHGs had established 2994 saving accounts. Within the savings accounts there was a total of Rs. 14, 29, 890 in credited savings (Table 1).

The number of SHGs groups, revolving funds, and bank loans were found to increase throughout the study period (Table 2). This finding suggest that revolving funds and bank loans increased with the increasing number of SHGs groups.

There was a significant difference in the number of SHGs over the study years. Similarly, there was a significant difference found between revolving fund and bank loans over the study years from 2000 to 2005 (Table 3). This again indicates that revolving funds and bank loans varied significantly depending upon on the number of SHG group members.

There was no significant difference between the amounts of SHGs among different sites. In each site, SHGs were increasing at a gradual manner, however this increase was not statistically significant. Similarly, there was no significant difference between the revolving funds and bank loans at the different study sites (Table 4). This finding suggests that a similar strategy was followed in terms of money allotment and sharing among these five sites.

Year-wise comparisons between SHGs groups, revolving fund and bank loans are displayed in Table 5. A comparison of the study years 2000 to 2001, 2002, 2004, 2005, showed that there was no significant mean difference in SHGs, revolving funds and bank loans. Conversely over the time period 2000 to 2003, there was a significant mean difference found between the amount of SHGs, revolving funds and bank loans. When comparing 2001 to 2003, 2004, 2005 and 2002 to 2003, there was a significant mean difference found in the amount of SHGs, revolving funds and bank loans. Therefore, in general, there was not normally a significant increase over the studied years.

Site-wise comparisons of the significant mean differences between SHGs groups, revolving fund and bank loans are presented in Table 6. There was no significant mean difference amongst the different sites for number of SHGs groups and amount of revolving funds and bank loans except between the Cuddalore and Keerapalayam sites (Table 6).

Our study on SHGs and micro credit has found that these financial practices are beneficial for women's economic growth at a small scale level. Based on the present research, we suggest our findings are used to support a more extensive and detailed research in future by both academics and institutional researchers. The major finding of our study is that the establishment and gradual increase in the number of SHGs groups benefits women's economic growth significantly in five sites of within the Cuddalore district. Additionally, the increasing number of SHGs group influence the amount of financial benefits women obtain. The formation of SHGs and their activities have improved the standard of living of the victor people and they can lead the way for future economic development of these people. With loans from savings funds, members received enhanced access to educational and health services. Also, with the loans received from federations and banks, member households were making efforts to stabilize or improve agricultural production and/or start income generation activities. Generally in the rural economy money lenders play a very vital role. Often the inadequate finance at reasonable rate is the main cause of delayed entrepreneurial progression. The formation of SHGs has facilitated the pooling of resources and enabled the members to raise funds for productive purposes.

It has previously been reported that some self-help groups break down immediately after getting either revolving funds or members join new groups with new sets of leaders. It can create another dose of funding and /or a subsidy, which limits the quality of SHGs. Access to bank credit should be increased by taking various simple operational decisions and steps like standardizing the set of documents to be furnished by an SHG for opening its bank account or for accessing credit. It has been observed that in most of the SHGs in the examined districts; few members of the SHGs are actively engaged in the decision making process. These few active members highly influenced the groups' decisions but the majority of them were often aware about the issues for organizing and managing the SHGs. In most of the SHGs in selected districts they are guided by well-established rules and regulations for organizing and managing the same, but there were occasionally cases were these were not known to the majority of the group members.

The observed differences in SHGs formation and comparison groups over the studied years resulted in an influence on overall women's empowerment with an effect on financial assistance such as revolving funds and bank loans. However, there was no significant variation between sites in terms of formation of SHGs groups, sharing revolving funds and bank loans. This finding indicates that SHGs groups' functional strategies are similar throughout the Cuddalore district. The SHGs annual increase can strengthening the women economic growth that can manage sustainable

development of profitable generation.

## CONCLUSIONS

Our study has shown that micro finance programs do provide economic benefits to the people for whom the programs were initiated. These benefits were mainly surrounding the availability of savings and credit facilities, access to credit for consumption and production, and use of credit for undertaking income generation activities. Additionally, it can be concluded that micro finance programs do provide the poor with access to credit, enable them to undertake income generation programs and contribute to higher poverty reduction rates. Considering that the formal banking institutions have not had much success in improving the access to credit for the poor, the strategy of supporting the formation and nurturing of micro finance groups for poverty alleviation is worth pursuing.

## ACKNOWLEDGEMENT

We are thankful to Dr. D. Mohandass, XTBG and Mr. Mason Campbell for their valuable comments, English editing and suggestions on this paper. We conveyed our deep thanks to all Professors and staffs of Department of Commerce, Periyar Arts College, Cuddalore, Tamilnadu. We also conveyed our thanks to the Management and all staffs of the project office, Cuddalore for their kind co-operation and valuable suggestion given by them from time to time. We are thankful to Management and coordinator in St. Joseph College, Cuddalore.

## REFERENCES

- [1] Amin, R., Becker, S., & A. Bayes. (1998). NGO-promoted microcredit programs and women's empowerment in rural Bangladesh: quantitative and qualitative evidence. *The Journal of Developing Areas*, winter: 221-236.
- [2] Hashemi, S., Schuler, S.R., and Riley, A.P. (1996). Rural Credit Programs and Women's Empowerment in Bangladesh. *World Development* Vol. 24, No. 4.
- [3] Jayaraman, R. (2005). Performance analysis of fisherwomen Self Help Groups in Tamilnadu, report submitted to National Bank for Agricultural and Rural Development. Thoothukkudi, Tamilnadu, India
- [4] Kabeer N. (2000). Conflicts over credit: Re-evaluating the empowerment potential of loans to women in rural Bangladesh, *World Development* 29(1): 63-84.
- [5] Mayoux, L. (1998). Women Empowerment and Micro-finance Programmes: Approaches, Evidence and Ways Forward. DPP Working Paper. No. 41.
- [6] Mohindra, K.S., Haddad, S. & D. Narayana. (2008). Can microcredit help improve the health of poor women? Some findings from a cross-sectional study in Kerala, India. *International Journal for Equity in Health*. 7: 1-14. doi:10.1186/1475-9276.
- [7] Wright, G.A.N. (1999). Examining the Impact of Micro-finance Services: Increasing Income or Reducing Poverty. *Small Enterprise Development* Vol.10. No.1.

Table 1. Site names, total number of SHGs, total members of SHGs, number of beneficiary bank accounts and total saving amounts in lakhs in the Cuddalore District, Tamilnadu, India.

Site name	Total SHGs	Total members of SHG	No. of SHGs with Bank A/C	Total Savings (Rs. In Lakhs)
Annagramam	925	12832	625	425.77
Cuddalore	898	15678	698	256.67
Keerapalayam	590	12498	512	215.57
Kurinjpadi	664	10864	576	213.54
Panruti	1030	16450	583	318.34

Table 2. Annual changes in the number of SHGs, revolving funds (in lakhs) and bank loans (in lakhs) recorded over the period 2000-2005 for the five examined sites of the Cuddalore District, Tamilnadu, India.

Sites	2000			2001			2002			2003			2004			2005		
	SHGs Nos.	RF paid (Lakhs)	Bank Loan (Lakhs)	SHGs. Nos	RF paid (Lakhs)	Bank Loan (Lakhs)	SHGs. Nos.	RF paid (Lakhs)	Bank Loan (Lakhs)	SHGs. Nos.	RF paid (Lakhs)	Bank Loan (Lakhs)	SHGs. Nos.	RF paid (Lakhs)	Bank Loan (Lakhs)	SHGs. Nos.	RF paid (Lakhs)	Bank Loan (Lakhs)
Annagramam	76	18.75	2.56	66	4	3	93	23.25	6.25	128	35.78	12.75	142	13	14	193	63.25	13.3
Cuddalore	126	31.5	7.45	82	3	8	127	31.75	9.75	243	78.93	18.5	228	17	19	167	61.75	31.8
Keerapalayam	38	9	1.98	22	5.5	5.5	62	15.5	5.5	110	21.56	12	75	3.5	15.5	101	15.5	16.5
Kurinjpadi	56	14	2.1	41	2.75	2.75	67	16.75	4.75	189	28.22	11	127	4.75	12.8	124	26.5	16.8
Panruti	44	11	2.98	34	1	3	48	12	7	168	24	10	117	11	11	148	22	12
Total	340	84.25	17.09	65	16.3	22.3	397	99.25	33.3	838	188.5	64.75	169	49.25	72.3	733	189.3	90.3

Table 3. Annual mean differences in SHGs groups, revolving funds, and bank loans in the Cuddalore District, southern India.

Source	Sum of Squares	DF	Mean Square	F	P
Intercept	350352.1	1	350352.133	209.299	<0.001
SHGs × year	59145.47	5	11829.093	7.067	<0.001
Intercept	13082.99	1	13082.991	62.265	<0.001
Revolving fund × year	5094.555	5	1018.911	4.849	0.003
Intercept	2986.415	1	2986.415	184.233	<0.001
Bank loans × year	890.624	5	178.125	10.989	<0.001

Table 4. Site mean differences in SGHs, revolving funds and bank loans in the Cuddalore District, southern India.

Source	Sum of Squares	DF	Mean Square	F	P
Intercept	350352.1	1	350352.133	125.025	<0.001
SHGs × Site	29263.53	4	7315.883	2.611	0.06
Intercept	13082.99	1	13082.991	44.58	<0.001
Revolving fund × Site	2800.553	4	700.138	2.386	0.078
Intercept	2986.415	1	2986.415	73.19	<0.001
Bank loans × Site	259.579	4	64.895	1.59	0.208

Table 5. Year-wise comparisons of the mean differences in SHGs, revolving funds and bank loans in the Cuddalore District, southern India.

Year-wise comparisons	SHGs	Revolving fund	Bank loans
	Mean $\pm$ SE	Mean $\pm$ SE	Mean $\pm$ SE
2000 - 2001	19 $\pm$ 25.88 <sup>ns</sup>	13.6 $\pm$ 9.2 <sup>ns</sup>	-1.04 $\pm$ 2.55 <sup>ns</sup>
2000 - 2002	-11.4 $\pm$ 25.88 <sup>ns</sup>	-3.0 $\pm$ 9.2 <sup>ns</sup>	-3.24 $\pm$ 2.55 <sup>ns</sup>
2000 - 2003	-99.6 $\pm$ 25.88 <sup>**</sup>	-20.85 $\pm$ 9.2 <sup>ns</sup>	-9.44 $\pm$ 2.55 <sup>**</sup>
2000 - 2004	-69.8 $\pm$ 25.88 <sup>ns</sup>	7.0 $\pm$ 9.2 <sup>ns</sup>	-11.04 $\pm$ 2.55 <sup>***</sup>
2000 - 2005	-78.6 $\pm$ 25.88 <sup>ns</sup>	-20.95 $\pm$ 9.2 <sup>ns</sup>	-14.64 $\pm$ 2.55 <sup>***</sup>
2001 - 2002	-30.4 $\pm$ 25.88 <sup>ns</sup>	-16.6 $\pm$ 9.2 <sup>ns</sup>	-2.2 $\pm$ 2.55 <sup>ns</sup>
2001 - 2003	-118.6 $\pm$ 25.88 <sup>**</sup>	-34.45 $\pm$ 9.2 <sup>**</sup>	-8.4 $\pm$ 2.55 <sup>*</sup>
2001 - 2004	-88.8 $\pm$ 25.88 <sup>*</sup>	-6.6 $\pm$ 9.2 <sup>ns</sup>	-10 $\pm$ 2.55 <sup>**</sup>
2001 - 2005	-97.6 $\pm$ 25.88 <sup>**</sup>	-34.55 $\pm$ 9.2 <sup>**</sup>	-13.6 $\pm$ 2.55 <sup>***</sup>
2002 - 2003	-88.2 $\pm$ 25.88 <sup>*</sup>	-17.85 $\pm$ 9.2 <sup>ns</sup>	-6.2 $\pm$ 2.55 <sup>ns</sup>
2002 - 2004	-58.4 $\pm$ 25.88 <sup>ns</sup>	10.0 $\pm$ 9.2 <sup>ns</sup>	-7.8 $\pm$ 2.55 <sup>ns</sup>
2002 - 2005	-67.2 $\pm$ 25.88 <sup>ns</sup>	-17.95 $\pm$ 9.2 <sup>ns</sup>	-11.4 $\pm$ 2.55 <sup>**</sup>
2003 - 2004	29.8 $\pm$ 25.88 <sup>ns</sup>	27.85 $\pm$ 9.2 <sup>ns</sup>	-1.6 $\pm$ 2.55 <sup>ns</sup>
2003 - 2005	21 $\pm$ 25.88 <sup>ns</sup>	-0.102 $\pm$ 9.2 <sup>ns</sup>	-5.2 $\pm$ 2.55 <sup>ns</sup>

Significant level ns = not significant, \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$

Table 6. Site-wise comparison of the mean differences in the number of SHGs, revolving funds and bank loans in the Cuddalore District, southern India.

Sites	SHGs	Revolving fund	Bank loans
	Mean $\pm$ SE	Mean $\pm$ SE	Mean $\pm$ SE
Annagramam - Cuddalore	-45.83 $\pm$ 30.56 <sup>ns</sup>	-10.98 $\pm$ 9.89 <sup>ns</sup>	-7.12 $\pm$ 3.69 <sup>ns</sup>
Annagramam - Keerapalayam	48.33 $\pm$ 30.56 <sup>ns</sup>	14.58 $\pm$ 9.89 <sup>ns</sup>	-0.86 $\pm$ 3.69 <sup>ns</sup>
Annagramam - Kurinjipadi	15.67 $\pm$ 30.56 <sup>ns</sup>	10.84 $\pm$ 9.89 <sup>ns</sup>	0.28 $\pm$ 3.69 <sup>ns</sup>
Annagramam - Panruti	23.12 $\pm$ 30.56 <sup>ns</sup>	12.84 $\pm$ 9.89 <sup>ns</sup>	0.97 $\pm$ 3.69 <sup>ns</sup>
Cuddalore - Keerapalayam	94.12 $\pm$ 30.56 <sup>*</sup>	25.56 $\pm$ 9.89 <sup>ns</sup>	6.24 $\pm$ 3.69 <sup>ns</sup>
Cuddalore - Kurinjipadi	61.5 $\pm$ 30.56 <sup>ns</sup>	21.83 $\pm$ 9.89 <sup>ns</sup>	7.39 $\pm$ 3.69 <sup>ns</sup>
Cuddalore - Panruti	69 $\pm$ 30.56 <sup>ns</sup>	23.82 $\pm$ 9.89 <sup>ns</sup>	8.08 $\pm$ 3.69 <sup>ns</sup>
Keerapalayam - Kurinjipadi	-32.67 $\pm$ 30.56 <sup>ns</sup>	-3.74 $\pm$ 9.89 <sup>ns</sup>	1.15 $\pm$ 3.69 <sup>ns</sup>
Keerapalayam - Panruti	-25.17 $\pm$ 30.56 <sup>ns</sup>	-1.74 $\pm$ 9.89 <sup>ns</sup>	1.83 $\pm$ 3.69 <sup>ns</sup>
Kurinjipadi - Panruti	7.5 $\pm$ 30.56 <sup>ns</sup>	1.99 $\pm$ 9.89 <sup>ns</sup>	0.69 $\pm$ 3.69 <sup>ns</sup>

Significant level ns = not significant, \* $P < 0.05$