EDUCATION, AGRICULTURE AND RURAL DEVELOPMENT – A STUDY OF TWO VILLAGES IN SOUTHERN INDIA.

D V Gopalappa and R S Deshpande*

ABSTRACT:

Education per se does not necessarily enter into the production process to enhance allocative and technical efficiency, but it is the application of education that enhances the process and lifts the production surface. Therefore, the mutually reinforcing role assumes importance. Under certain conditions, a peasant may not have an easy access to new ideas and techniques and skill indispensable for achieving a breakthrough in farm production. Here the availability of basic education will provide an initiative. Skill formation comes later. The mechanisms through which education enhances farm productivity are of various kinds. Education enables the farmers to produce larger quantities of output from the same quantities of inputs, as it helps them to allocate resources in a cost-efficient manner, choosing which and how much of each output to produce, and in what proportions to use inputs in production. In this paper an empirical evidence has been given where education was given by the Sericulture Quality Clubs (SQCs). In one village (Kuruburu) where the SQCs office bearers are literate, the progress is too good in terms of production and productivity and it is opposite in the other village (Nayakarahalli) where the SQC office bearers do not even have the basic education. The comparative study reveals that Kuruburu village has more dynamic components of growth, despite the fact that the two villages have similar structural characteristics. Basic education seems to make a great difference through exposure to information. Though we have a little direct empirical evidence to buttress this argument, the field observations strongly suggest that basic education did make the difference. Availability of information is only one component but imbibing and utilising it is quite another. The later makes the difference quite acute and creates dividing line. Therefore, we tend to accept that basic education along with skill formation make the difference in the production process.

---

* The authors are on the faculty of Economics and ADRT unit of the Institute for Social and Economic Change, Bangalore respectively. They can be contacted at Gopalappa@yahoo.com and deshpande@isec.ac.in.

Introduction

Several attempts have been made to segregate the impact of education on farm production and rural development. However, much of the thinking is in the form of associating education as one of the components to explain the variations in production. In this process, the quality of education as a supportive tool takes a backseat. There have been attempts to treat education separately as formal education as well as skill-oriented traditional wisdom though these are mutually reinforcing. Education per se does not necessarily enter into the production process to enhance allocative and technical efficiency, but it is the application of education that enhances the process and lifts the production surface. Therefore, the mutually reinforcing role assumes importance. Agricultural extension however, has a definite and different connotation. David and Hearne (1955), in their classical book on extension, connote a clear meaning of Agricultural Extension as being the farmers' non-formal education and training to bring about changes in their knowledge skill and attitude farmer so as to enable them to adopt evolved technologies through agricultural research with the help of local leaders and extension agents. In another authoritative and earlier attempt, Wilson and Gallup (1955) took a similar position. Thus most of the literature on extension treat education differently than extension but never taken, recognise the role of education independently. Our attempt here is to underscore the mutually supporting role of the two. Under certain conditions, a peasant may not have an easy access to new ideas and techniques and skills indispensable for achieving a breakthrough in farm production. Here the availability of basic education will provide an initiative. Skill formation comes later. Some of the recent works do support the hypothesis that education creates such conditions and thereby impacts the production process[1]. And further it suggests that there should not be any delay or gap between research and extension. Otherwise the investment on research becomes costlier when compared to the returns.

Rural development strategies over-emphasising land and undervaluing human contributions have not succeeded considerably (Schultz, 1981). It was realised that `the fundamental problem of agricultural growth is an education problem' (Wharton, 1965). Hence, the need for education arises for rural development, in general and agricultural development, in particular. It is necessary to note in this context that education has two components: a) education for peasants, which improves their skill, and replaces their traditional attitudes with modern ones, improving their innovative and allocative abilities, etc. b) research in agriculture provides the peasant with new techniques of production and new inputs as well. These two again have to be mutually supportive and interdependent.

Agricultural education, as well as the education sector supporting rural development can be categorised into five components. All these approaches are interdependent as well as self-supporting. First comes the education in traditional universities in the branches of science and social sciences supporting agriculture and rural development. These include botany, animal sciences, economics specifically applied to the fields closer to agriculture and rural development and learning about society

through history, sociology and political science. These branches of knowledge and training prepare individuals to understand the basic knowledge pertaining to agriculture and rural development. The second stream of training institutions are leaning strongly towards agriculture through training imparted in the agricultural universities of the state and centrally sponsored agricultural research institutions like Indian Agriculture Research Institute (ICAR) and Indian Council of Agricultural Research (ICAR). The agricultural universities and colleges associated with them impart training in all the branches of agriculture sciences including essential social sciences. Agricultural universities also have a strong extension wing to carry lab research to the farmers' field. The universities have close coordination with the state governments and other research organs of the state. Thirdly, agriculture and rural development education is supported by technical schools and skill imparting technical institutions. These are basically the skill development institutions meant for on-hand training for the farmers and rural development functionaries. Technical institutions like the Industrial Training Institute (ITI) help in providing training to support the technical side of agriculture and rural development. This forms the fourth important category among the training institutions providing essentials of knowledge for rural development and agricultural growth. Lastly, there are a large number of development programmes, which have agriculture and rural development training as one of the important components. These training programmes are conducted by the state government or by the Central government under specific components of the schemes. Such programmes include the training for watershed development schemes, irrigation management, integrated pest management and many such programmes. All these together impact the quality of the farm manager. But the basic hypothesis is that training alone is a sufficient condition to achieve a higher production surface. The necessary condition for this achievement is basic literacy. These two together can have substantial impact on the technology adoption. This improves the technical efficiency as well as the allocative efficiency and gets reflected in an upward shift in production surface. Duraiswamy's (1992) paper also reveals that the `allocative effect' of education refers to allocative efficiency – the ability of the educated farmers to obtain, analyse and understand economically useful information about inputs, production and commodity-mix, which enhances their ability to make optimal decisions with regard to input use and product mix.

Effects of Education on Farm Productivity

The mechanisms through which education (here we mean basic education and training together) enhances the productivity on farm are of various kinds. Education enables the farmers to produce larger quantities of output from the same quantities of inputs, to allocate resources in a cost efficient manner, choosing which and how much of each output to produce, and in what proportions to use inputs in production. The physical effects of education on agricultural productivity of workers include a few distinct ones[2]: a) innovative effects such as the ability to decode new information, know what, why, where and how; ability to establish quicker access to newly available economically useful information, b) allocative effects such as ability to choose optimum combinations of crops and agricultural practices in least number of trials and optimum time

for marketing, transportation, etc., c) worker effects such as ability to perform agricultural operations more efficiently in the economic sense, d) externalities. The worker effect is related to the enhanced capacity of production with a given set of inputs, and the allocative effect has to be with the farmer's ability to acquire and decode information about costs and productive characteristics of other inputs. The core of the allocative effect is the capacity to evaluate and adopt profitable new technologies from among the shelf of technologies. Education enhances the productivity of labour directly; it lowers the cost of deferring information about the production technology, which thereby increases productive efficiency by enhancing the selected mix of output and inputs; and it facilitates more rapid entrepreneurial response to disequilibria created by changes in output and input prices and by the introduction of new inputs and production technologies. Thus there is a significant direct and indirect impact of education on farm efficiency.

Differences in educational levels were found to explain one-quarter to one-half of the differences in labour productivity in agriculture between the United States, on the one hand, and India and the Philippines in Asia, on the other (Hayami and Ruttan, 1970, p.906). A survey of evidence on 37 countries concluded that on an average, education of four years of primary schooling of farmers would enhance the farm output by 8.7 per cent (Lockheed et al., 1980). Study by Tilak (1993) reveals that Education significantly influences methods of production, use of modern inputs like fertilisers, seeds and machines and selection of crops. Wages among landless labourers are also positively influenced by differences in their levels of education. Further he mentions that there also exists a threshold level of education for its impact to be significant and while this level varies for different countries marginally and for different purposes, mostly it tends to increase to the secondary level education of about ten years of schooling. The threshold level of education is relevant not only for farm efficiency, but also for other activities like utilisation of credit facilities, improved seeds and better methods of farming. As the economy develops and technological developments take place, this threshold level goes up. For example, in India elementary education was the threshold level during the sixties, while it was secondary level during the seventies. Therefore, imparting education in India at the village level is very important to increase the production and productivity. In this context an effort has been made to understand to what extent the farmers (across various levels of education) are receptive to a government programme introduced by the Karnataka State sericulture department to create awareness among the farmers, by establishing a forum called `Sericulture Quality Clubs' (SQC). This initiation is the first of its kind in the states[3] where sericulture is one of the lucrative enterprises.

Methodology:

There are three different ways of analysing the impact of education on agricultural and rural development. The first method involves treating education as one of the components along with the other inputs to decide the shape of the production surface. In this approach it is assumed that there exists a substitutability between inputs like fertilisers, irrigation, pesticides, seeds and education. This is more

a `blindfold ally, approach wherein the quality of education and the process through which education impacts the production surface are not clearly separated. Here again the quality of education and its direct relevance to the production process are not made explicit and therefore there is always a danger in assuming that any kind of education will enhance productivity equally. Furthermore and more dangerously, education is treated as homogenous a commodity. The second approach segregates the impact of education by maintaining differences in quality of education and picking up a proper variable, sometime even introducing a break in the production surface, in order to arrive at elasticity parameters. This approach is more akin to the one we intend to follow. However, in this approach a correction needs to be incorporated introducing and recognizing the two components of education, namely basic knowledge and skill upgradation. The third approach takes a specific skill upgradation programme and compares the group, which has undergone the skill upgradation programme with and without education.

This paper is based on primary data collected from two villages of Kolar district of Karnataka State. The data relate to the agricultural year 2000 - 2001 for both the villages. About 138 sericulture HHs in both the villages were studied. However, it is important to mention that the data have been drawn from the available field material and not from the investigations specifically designed for this paper.

Sericulture Quality Club

The sericulture quality clubs impart training in various sericulture related activities to the farmers. These include:

a) The lead farmers and members in the quality club have to experiment the new varieties of mulberry and silkworm races and have to try the new methods of silkworm rearing like shoot harvesting and silkworm feeding methods and impart the same to the other sericulturists in the village.

b) Purchasing and distribution of quality disinfectants to the sericulturists who depend most of the time on businessmen for the same and get cheated. The local businessmen supply the adulterated disinfectants, which result in the failure of crops.

c) The quality clubs have to purchase the modern equipments like sprayers and chandrikes[4] and hire them at a lower rate to the marginal and small farmers as these are resource poor to buy the same.

d) To construct the common spinning shed and facilitate the sericulturists in general and marginal and small farmers in particular to keep their mountages and get good quality cocoons[5].

It can be clearly seen that these activities specifically focus on enhancing the quality of the sericulturists. But are these sufficient to impart the skill. These help to improve various aspects like: a) knowledge enhancement of the sericulture entrepreneurs b) facilitate the marginal and small farmers by giving sericultural equipments c) increase the cocoon yield of the marginal and small farmers, in particular and the sericulturists, in general.

Village Profiles:

The villages selected for the purpose of this study are two revenue villages viz., Kuruburu and Nayakarahalli in Chintamani taluk of Kolar district and Kolar taluk of the same district respectively. In Kuruburu, the farmers and also the general public are receptive in nature as they are obliged to the suggestions made by the resource persons. Whereas in Nayakarahalli the farmers and the general public, due to their ignorance and illiteracy, feel that they know everything and do not need to listen to others. In these villages there are about 834 and 305 Households (HHs) (According to the 1991 Census the total HHs are 345 and 175 respectively Table-1). Of the total households about 30 and 17 per cent are landless in respective villages. In Kuruburu there is about 1300 acres of land, out of this about 46 per cent of the land is irrigated throughout the year and another 23 per cent is covered by seasonal irrigation through tanks and open wells. In Nayakarahalli there is about 1067 acres of land, out of this about 25 per cent is irrigated

Table – 1: Socio-Economic Status of the Two Villages

Sl. No.	Particulars	KURUBURU	NAYAKARAHALLI
1.	Total No. of HHs[6].	834	305
2.	No. of Reddy HHs.	96	149
3.	No. of Muslim HHs.	245	104
4.	No. of SC HHs.	323	49
5.	Other HHs.	190	5
6.	Total land in the village in acres	1,300	1,067
7.	Percentage of irrigated land	46	25
8.	Percentage of seasonal irrigated land	23	10
9.	Percentage of Landless HHs.	30	17
10.	Percentage of fallow land	25	52
11.	No. of bore-wells	350	250
12.	Percentage of bore-wells dried	34	58
13.	Avg. size of the land in acres	1.5	3.5
14.	% of Literacy (1991 Census)	45.08	30.06

throughout the year and another 10 per cent of the land is covered by seasonal irrigation through tank and open wells. In both the villages, Vokkaliga (Reddys and Gowdas) are dominant in terms of owning land, economic power and the social status. The main occupation in both the villages is sericulture enterprise, agriculture and dairy activity. The landless labourers work as silkworm rearing labourers, agricultural labourers and beedi rolling exclusively in Nayakarahalli. The major crops cultivated in the villages are mulberry, ragi, paddy and vegetable crops. In Kuruburu there are about 12 graduates but very few have gained employment, while the remaining are taking care of the mulberry cultivation and silkworm rearing. The literacy rate is low in Nayakarahalli. However there are graduates like MSc Agriculture, MBBS and also one BE graduate.

Ia. Infrastructure in the Villages

Kuruburu is wellconnected by roads to the district and taluk headquarters and even the capital city of the state. Whereas, Nayakarahalli has poor transport facilities when compared to the other village. One has to take two or three stopovers to reach Bangalore. In Kuruburu there are about 100 telephones, 10 tractors and about 35 refrigerators. There is a government primary and middle school and private high school established in the village. The post office, bank, primary health centre, veterinary hospital (located about one km away from the village) are available in the same village. About 1,500 litres of milk is being produced and sent to the district headquarters from this village. From the dairy enterprise alone about Rs12,750 is flowing into the village every day. The villagers admit that this is because of the sericulture enterprise. In Nayakarahalli there are about 12 telephones, 4 tractors and about 4 refrigerators. The high school was established recently in the village. For the post office, bank facilities, police station, primary health centre and veterinary hospital they have to travel about four kms. There is a dairy cooperative society in the village. About 560 litres of milk will be sent to the district headquarters from this village and the village earns about Rs4,760 from this activity. Even these villagers claim that this is because of the sericulture enterprise.

These villages had an opportunity to form the Sericulture Quality Clubs supported by the Department of Sericulture financed about Rs.10,000 with a set of objectives, viz., to reduce the cost of production of silk cocoons; to improve the efficiency of resource use; to increase the mulberry leaf and cocoon production; to improve the silkworm rearing infrastructure; to impart negotiation power to access loans from different sources and to take the initiative to solve the local problems on their own.

Group Formation Process

In Kuruburu the farmers are dynamic and especially the youngsters have interest in implementing the new varieties, technologies and new silkworm rearing practices. Therefore, when the officials approached them they readily agreed and formed the society on their own and later obtained financial support from the sericulture department. Whereas the farmers in Nayakarahalli appear to be sober and did not take any initiative on their own. The department officials had taken part in each and every process of registration of the society and completed all the formalities. Chart 1 explains in detail why the difference among the farmers in these two villages, which are situated within 30 kms. radius.

CHART 1: Explains the Group Formation Process in both the Villages

KURUBURU	NAYAKARAHALLI
1. The officials had good links with the villagers	It is lacking in this village.

2. The villagers have the urge to learn new Things and implement them even today	The villagers think they know everything and nothing is left to learn
3. The villagers have come forward to form SQC in their village	The villagers did not come forward on there own. The officials had to struggle to convince them to form SQCs
4. The president and the members are below 30 years of age	The president and the members are above 35 years of age
5. The literacy rate of the members is high as all the members are literate and studied until 7th standard and two members have passed BA and B.Com.	The literacy rate of the members is low as all the members have not studied and only the president has passed 7th standard
6. Even the women members are literate and keen to take part in activities of the SQC.	There is one woman in the SQC as member but she is not aware that she has to attend the meetings

---

Casual vis-à-vis Causal

The relationship between education and the process of production cannot be casual in the sense that education per se may not have a direct relationship in improving the production process. But the fact that a person is educated may allow him or her to interact with the alternative production processes effectively and thereby improvise in the ongoing process. Such a relationship can be called as a `casual' relationship between education and production. In other words training, which does not necessarily involve enhancement of skill specifically oriented to use production process may have a `casual' relationship with the process. On the other hand, a `causal' relationship between education and the production process can be established especially in the context of training, which is job oriented. Under such relationship that training as a direct relevance to the production process and therefore a `causal' relationship can be firmly established. Duraiswamy (1992) also concludes, based on empirical study, that education has a positive and significant effect on single and multi-crop production. A one-year increase in the education of the head of the farm household increases the paddy output by one per cent and the gross sales value from all crops by 4 per cent. Chishti and Husain (1990) concludes that the extension services have improved the productivity of cotton by about 16 per cent in Tharparkar District (Sindh) of Pakistan. In the context of the present paper we have chosen an approach which essentially involves an incidental relationship between education and the process of production. This is represented by the direct training facility provided through the SQC. The activities involved in the SQC have a direct relevance in skill upgradation and therefore are expected to make substantial difference in value addition.

Working Process of the Groups

As already explained, the farmers in Kuruburu are young, energetic and all are literate (village literacy rate is about 45.08 per cent, 1991 Census). Therefore, they took calculated risks and formed the society which is currently functioning well. Whereas, most of the farmers in Nayakarahalli are illiterates (overall literacy rate in the village is 30.06 per cent, 1991 Census), ignorant and crossed 35 years of age (including the president), they do not show any interest in the activities of the SQC, resulting in the poor performance of the SQC. Chart 2 explains the working process of the group.

CHART 2: Explains the Working Process of the Groups in Both the Villages

KURUBURU	NAYAKARAHALLI
1. Members have independently conducted about 8 formal meetings along with the of the Department.	Members did not take any initiative to conduct meetings on their own. The officials on their own conducted two meetings in the village.
2. Mmembers, in addition to the formal meetings, conducted informal meetings every week to discuss the ongoings in the SQC.	Members did not conduct any informal meetings even after 2 years of its formation.
3. Bank account was started in the name of the SQC and there is transaction in the bank.	President or the members did not bother to have an account in the bank. The bank officials did not know about the SQC at all.
4. SQC has started purchasing the disinfectants from the factory directly and started supplying them for the needy farmers even on credit basis.	SQC did not purchase any disinfectants. The sericulturists purchase from the local retailers who charge more price and give adulterated disinfectants.
5. SQC has purchased two automatic sprayers and rented them to the farmers.	SQC has purchased only 40 chandrikes and rented them to the farmers. The other farmers in the village do not substantiate this.
6. Members have invited scientists from the agricultural college and arranged lectures about mulberry cultivation and silkworm rearing practices.	Mmembers did not bother about these and they say that they know each and everything.
7. Majority of the lead farmers have gone in for the pit system of mulberry cultivation, which according to them, yields 25 per cent more than the row system.	Only two lead farmers have gone in for the pit system of cultivation.
8. Lead farmers have started going for drip irrigation, which according to the members, saves	Only two lead farmers have gone in for drip irrigation .

3/4th the water compared to the flood irrigation.

9. Lead farmers (members) started cultivating new varieties of mulberry viz., V-1 and S-36, which started yielding more leaf compared to the local and M-5 varieties.	Only one or two members started cultivating the new varieties of mulberry.
10. All lead farmers started getting experience in rearing the CSR variety, which is a new variety introduced by the Central Silk Board (CSB). The yield rate is high compared to the crossbred variety which is so popular in the area.	Only a few members started practising the new variety of silkworm.

The chart clearly reveals that the farmers in Kuruburu are more progressive when compared to their counterparts in Nayakarahalli. The informal meetings helped the farmers to understand themselves and keep away from their internal squabbles. This helped them to do well. Secondly, the disinfectants purchased and supplied by the SQC have an impact on the marginal and small farmers. Earlier they used to buy from the retailers, who used to cheat them by supplying adulterated material, resulting in crop loss. But now the problem is solved as they get quality disinfectants from the factory directly and moreover they avail of credit and repay after harvesting the crop. Due to the absence of these, in Nayakarahalli, the farmers are losing one or the other cocoon crop. The farmers in Kuruburu have bought sprayers to disinfect the rearing shed and spray chemicals to the mulberry garden. It is difficult for the marginal and small farmers to buy the sprayer on their own as it costs around Rs6,000. Therefore, it is convenient for the weaker sections to take it on rent by paying about Rs 6 per time. These facilities are not available in Nayakarahalli . The president of the SQC in Nayakarahalli said that he had bought about 40 chandrikes and was renting them to the weaker section. However, the farmers of Nayakarahalli denied this and did not know who has been taking the chandrikes. Only the president has been using them and the farmers are under the impression that the chandrikes belong to the president.

Two scientists were invited from the agricultural college to give lectures on the mulberry cultivation and silkworm rearing practices by the SQC of Kuruburu. This helped them to go in for pit system of mulberry cultivation, drip irrigation and taking up V-1 and S-36 varieties of mulberry. The scientists explained the importance of the CSR variety of silkworms. The pit system of mulberry cultivation increased the leaf yield by about 25 per cent than the row system of cultivation. Table 2 gives the sample size, average land in acres and the average mulberry area of the sample households in the study villages. Table 3 presents the number of farmers who have changed their method of cultivation from the row system to the pit system. In Kuruburu about 36 per cent of the sericulturists have taken up the pit system, whereas in Nayakarahalli it is only 11 per cent.

Table 2: Sample Size and Other Particulars

Farm Size	KURUBURU			NAYAKARAHALLI		
	Sample Size	Avg. Land in acres	Avg. area under mulberry in acres	Sample size	Avg. land in acres	Avg. area under mulberry in acres
Marginal	32	2.20	0.60	28	2.35	0.65
Small	24	3.80	0.85	19	3.85	0.90
Medium	12	6.65	1.25	9	7.15	1.10
Large	8	11.50	2.30	6	12.25	1.90
Total	76	4.39	0.96	62	4.46	0.91

Table 3: Percentage of the Sample HHs who have Changed the Method of Cultivation – Row to Pit System

Farm-Size	Sample Size	Before SQC	After SQC	Sample Size	Before SQC	After SQC
Marginal	32	0	5	28	0	1
Small	24	1	7	19	0	1
Medium	12	2	8	9	1	2
Large	8	2	7	6	1	3
Total	76	5	27	62	2	7
Per cent	100	6.5	35.53	100	3.23	11.29

Drip irrigation helps the farmers to save about 3/4 of the water when compared with the flood system of irrigation to the mulberry garden. Table 4 explains that about 25 per cent of the sample HHs in Kuruburu have gone for drip irrigation from the flood irrigation method. Whereas in Nayakarahalli only around 5 per

Table 4: Impact on Irrigation Method – Flood Irrigation To Drip Irrigation.

Farm Size	KURUBURU Sample size	Before SQC	After SQC	NAYAKARAHALLI Sample size	Before SQC	After SQC
Marginal	32	0	2	28	0	0
Small	24	1	4	19	0	0
Medium	12	2	6	9	1	1
Large	8	2	7	6	1	2
Total	78	5	10	62	2	3
Per cent	100	6.58	25.00	100	3.23	4.84

cent of the sample HHs have adopted the drip irrigation method. The V-1 and S-36 varieties are superior when compared to the local and M-5 varieties of mulberry. The S-36 variety suits for chawkie rearing, M-5 variety for middle rearing and V-1 variety for late-age rearing. Table 5 reveals that in Kuruburu about 74 per cent of the sample HHs have gone for improved mulberry varieties when compared to around 40 per cent in Nayakarahalli. The CSR variety of silkworms were tried by the lead farmers in the beginning and reaped good yield and therefore, the farmers in Kuruburu started rearing this variety. The farmers

Table 5: Adoption of Improved Mulberry Varieties M-5 to V-1 and S-36 Varieties

	KURUBURU			NAYAKARAHLLI		
Farm Size	Sample size	Before SQC	After SQC	Sample size	Before SQC	After SQC
Marginal	32	0	5	28	1	2
Small	24	2	8	19	2	3
Medium	12	5	17	9	4	9
Large	8	8	26	6	6	11
Total	78	15	56	62	13	25
Per cent	100	19.74	73.68	100	20.97	40.32

in Nayakarahalli though, trying to go in for these new varieties, do not have proper direction and they are afraid of the crop loss in case their decision proves wrong. The loss per acre, in case the crop fails, will be around Rs12,000. Therefore, farmers are normally reluctant to take up the new varieties unless they are sure of the returns. The confidence was created in Kuruburu but not in Nayakarahalli. Table 6 reveals that about 62 per cent of the sample HHs in Kuruburu have tried the CSR variety when compared to just 29 per

Table 6: Adoption of Improved Variety of Silkworm Race CB to CSR Variety.

	KURUBURU			NAYAKARAHALLI		
Farm Size	Sample size	Before SQC	After SQC	Sample size	Before SQC	After SQC
Marginal	32	0	4	28	0	1
Small	24	1	7	19	1	2
Medium	12	3	14	9	2	7
Large	8	5	22	6	5	8
Total	78	9	47	62	8	18
Per cent	100	11.84	61.84	100	12.90	29.03

cent in Nayakarahalli . Table 7 reveals the feeding practices by the sericulturists. The sericulturists have been following either leaf feeding or chopping the branches of mulberry and feeding them. In these two methods, leaf feeding consumes more labour compared to the other system of feeding. Because harvesting

Table 7: Changes in Silkworm Feeding Method – Leaf Feeding Method to Full-shoot Feeding Method

	KURUBURU			NAYAKARAHALLI		
Farm Size	Sample size	Before SQC	After SQC	Sample size	Before SQC	After SQC
Marginal	32	0	5	28	1	2
Small	24	2	8	19	2	3
Medium	12	5	17	9	4	9
Large	8	8	26	6	6	11
Total	78	15	56	62	13	25
Per cent	100	19.74	73.68	100	20.97	40.32

of branch and chopping is easier when compared with leaf feeding, the labour consumption ratio is 1:2. However, in recent years they started following the branch feeding method instead of chopping it. This method saves labour and makes bed cleaning easier. That also saves significant labour. The table indicates that about 74 per cent have changed the feeding method from chopping branches to full-shoot harvesting/feeding when compared to just 40 per cent in Nayakarahalli.

The Impact of The SQCs and Their Programmes:

Chart 3 reveals the impact of the SQCs and their programmes in both the villages. As a result of the collective action, distribution of disinfectants and the introduction of improved practices in sericulture enterprise by the sericulturists, in general, and the marginal and small categories of the sericulturists, in particular, started getting more returns in Kuruburu as they could control the diseases successfully. Before establishment of the SQC they were getting around 37 kgs of cocoons per 100

Chart 3: The impact of the SQCs and their programmes in both the villages

KURUBURU	NAYAKARAHALLI
1. Farmers have realised the importance of group operation due to cohesiveness.	Farmers do not know, even now, about the sericulture and group behaviour clearly.
2. Awareness was created about the improved	Farmers are little hesitant to go

	sericulture practices among farmers.	for improved sericulture practices.
3.	Farmers could control silkworm diseases almost successfully.	Farmers could not understand why they are losing crops even currently.
4.	The yield rate has gone up from 40 kgs to around 52 kgs per 100 DFLs even for the crossbred silkworm variety after forming the SQC.	The yield rate remained more or less same (40kgs to 42kgs per100 DFLs).

DFLs and now the yield is around 47 kgs for the same 100 DFLs. Whereas in Nayakarahalli they were getting around 36 kgs of cocoons and there is no much difference in the yield even after having SQC in the village (they are getting around 39 kgs, which is only a marginal increase, Table-8)[7] . Because of all these the income level has gone up from Rs47,000 to Rs68,000 showing about 45 per cent increase in come of

Table 8: Impact on Cocoon Yield in kgs. Per 100 DFLs.

	KURUBURU						NYAKARAHALLI					
	Before SQC			After SQC			Before SQC			After SQC		
Farm Size	DFLs Brushed Per acre	Cocoon Prodcn. Per 100 DFLs	Cocoon Prodcn. Per acre	DFLs Brushed Per acre	Cocoon Producn Per 100 DFLs	Cocoon Producn Per acre	DFLs Brushed Per acre	Cocoon Prodcn Per 100 DFLs	Cocoon Prodcn. Per acre	DFLs Brushed Per acre	Cocoon Prodcn Per 100 DFLs	Cocoon Producn. Per Acre
Marginal	1,250	32	394.24	1,350	42	567.00	1,250	31	387.50	1,275	34	433.50
Small	1,250	36	450.00	1,450	45	652.50	1,250	34	425.00	1,295	38	492.10
Medium	1,350	39	553.50	1,550	50	775.00	1,275	37	471.75	1,355	41	555.55
Large	1,375	41	563.75	1,550	51	790.50	1,285	39	501.15	1,350	43	580.50
Average	1,306	37	490.37	1,475	47	696.25	1,265	35.25	446.35	1,319	39	515.41

the farmers of Kuruburu (Table – 9). In case of the Nayakarahalli the income increased from Rs42,000 to Rs48,000 showing an increase of just 14 per cent. Though there is a marginal change in the income in Nayakarahalli, the difference is too high. This shows the positive effect of education on the income levels of the Kuruburu.

Table 9: Impact of Income Levels (Per Acre of Mulberry Garden)

	KURUBURU		NYAKARAHALLI	
	Before SQC	After SQC	Before SQC	After SQC

Farm Size	Avg. Price Per kg. of Cocoons	Cocoon Prodcution Per acre	Total Gross Income	Avg. Price Per kg of Cocoons	Cocoon Producn. Per acre	Total Gross Income	Avg. Price Per Kg of Cocoons	Cocoon Prodcn. Per acre	Total Grass Income	Avg. Price Per kg of Cocoons	Cocoon Prodcn Per acre	Total Gross Income
Marginal	94.25	394.24	37,157	96.15	567.00	54,517	94.15	387.50	36,483	95.10	433.50	41,226
Small	94.50	450.00	42,525	96.55	652.50	62,999	94.40	425.00	40,120	95.85	492.10	47,168
Medium	95.15	553.50	52,666	97.20	775.00	75,330	95.10	471.75	44,863	96.25	555.55	53472
Large	95.85	563.75	54,035	97.90	790.50	77,390	95.35	501.15	47,785	96.55	580.50	56,047
Average	94.94	490.37	46,596	96.95	696.25	67,559	94.75	446.35	42,313	95.94	515.41	49,478

The Future Plans of the SQCs in Both the Villages

The chart 4 three reveals the future plans of both the SQCs in Village – 1 and 2. The chart clearly reveals that the farmers in Kuruburu have their own plans, which will take them to great heights as they have interest to serve society and also make money for it. They have plans to have chawkie-rearing[8] centre so that marginal and small farmers can be supplied chawkie which is done under most scientific manner. If the crops are successful the farmers do not mind to pay more than what they pay for the layings. The

The chart 4: The future plans of both the SQCs in Village – 1 and 2.

	KURUBURU	NAYAKARAHALLI
1.	Plan to take up supply of fertilisers through the society.	No plans.
2.	Plan to have chawkie rearing centre and supply the chawkie worms to the sericulturists.	No plans.
3.	Plan to go for mass disinfection so that contamination in the village can be avoided.	No plans.
4.	Plan to go for mass rearing so that the SQC can supply chawkie in time to the farmers.	No plans.
5.	Plan to buy automatic sprayers which cost about Rs18,000 for three.	They are interested in buying two sprayers.
6.	Interested in buying chandrikes and hire them to earn money and also help the weaker sections who cannot afford to buy or take them on high rate of rent	President claims that they have about 40 chandrikes but farmers deny.
7.	Plans to construct common spinning shed	President says if the government

	as farmers from weaker sections are losing a portion of their produce due to dogs, monkeys, eagles, crows and ants. The main objective is to protect the cocoon crop from natural obstacles like rain, wind and heavy sun light.	sanctions about Rs3 lakhs they have plans to construct common spinning shed.
8.	Plans to consider the honorarium for the writer or staff of the SQC in due course of time.	No plans.

---

farmers have plans to go for mass disinfection and mass silkworm rearing. This helps the farmers in the village to protect their crop from diseases. Otherwise if a crop is affected by a disease,[9] there is a great likelihood of its spreading to other lots, and because of this farmers lose about two out of five crops reared in a year. Buying chandrikes and constructing a common spinning shed are the other programmes, which are common in both the villages. These have to be done to help the weaker sections who cannot own such costly equipments.

A cursory look at the comparison made above reveals that Kuruburu has more dynamic components of growth, despite the fact that the two villages have similar structural characteristics. Basic education seem to make a great difference through exposure to information. We have a little direct empirical evidence to buttress this argument but the field observation strongly suggests that basic education did make the difference. Availability of information is only one component but imbibing and utilising it is quite another. The latter makes the difference quite acute and creates a dividing line. Therefore, we tend to accept that basic education along with skill formation makes the difference.

Conclusion

The two villages differ in the quality of training that they have obtained through SQC. One village has some basic education level where the SQC training could achieve its desired goal; whereas it failed to impact in the other. We tried to seek empirical evidence about the impact of education on the production process through direct observation between two groups. The groups are constituted under the quality of education variable with and without a particular training facility provided through the SQC. There are three distinct methodological advantages that we could garner in this analysis - the direct observation of difference between the production process involving training and basic education and the other without basic education. This clearly brings out the value addition due to training. - this procedure has a clear advantage over the production function approach wherein `education' is treated as a homogeneous input and the emphasis is more on the quantity of education than quality. - distinct advantage got out of the process of comparing two distinct situations relates to the focused aspect of education. This is not feasible in the production function approach hitherto tried in the literature.

The empirical evidence reveals that farmers who possess basic education in the villages have better coordination than farmers who are illiterates and little above this standard. Kuruburu village has been successful in its attempt to form the society and make it as a successful programme. In approximately two years the society with the able guidance of the president, secretary and the members could make business of Rs2.3 lakhs just with the initial capital of Rs10,000 supported by the sericulture department. Out of this they could make a profit of Rs26,000 just by selling the disinfectants. More than these, they could invite the scientists and arrange the lectures, which helped them to take up the improved varieties of mulberry and silkworm races. Whereas, in Nayakarahalli the president and the members are not educated. The president has studied only till the 7th standard and all the other members are not educated and not that active. They keep quiet and do not question the president about the initial capital and also what happens in society. This has led to no improvement and most of the villagers do not know whether there is a society of this kind in their own village. The president does not like to interact with the people easily. Therefore, this has resulted in the stagnation of yield level in Nayakarahalli. However, it can be suggested that societies of this kind have to be encouraged for specific programmes. But one should select the better group with better education so that it is easy to convince them to take up modern implements and practices in agriculture, sericulture and other allied activities.

REFERENCES:

Chishti, Salim and Ahsan, Husain (1990). Extension Services and Cotton Productivity: A Case Study of Cotton Maximisation Project in Tharparkar District (Sindh) of Pakistan. *Indian Journal of Agricultural Economics*, 45(2): 159 - 65.

David, Kelsey and Cannon C Hearne (1955). *Cooperative Extension Work.* Ithaca, N.Y.: Comstock Pub.Associates.

Duraiswamy, P (1992). Effects of Education and Extension Contacts on Agricultural Production. *Indian Journal of Agricultural Economics*, 47(2): 205 - 14.

Evenson Robert, E and Dayanatha Jha (1973). The Contribution of Agricultural Research System to Agricultural Production in India. *Indian Journal of Agricultural Economics,* XXVIII(4): 212 - 30.

Hayami, Y and V W Ruttan (1970). Agricultural Productivity Differences among Countries. *American Economic Review,* 60(5): December.

Jamison D T and P Moock (1984). Farmer Education and Farm Efficiency in Nepal. *World Development,* 21(1).

Lockheed, M E, D T Jamison and L J Lau (1980). Farmer Education and Farm Efficiency: A Survey. *Economic Development and Cultural Change,* 29(1): October.

Sanders, H C (1955). *Cooperative Extension Service*. Wilson MC and Gladys Gallup Extension Service, USDA, Circular No 49, Washington DC.

Schultz, T W (1975). The Value of Ability to Deal with Disequilibria. *Journal of Economic Literature,* 13(3): September.

Schultz, T W (1981). *Investing in People.* University of California Press, Berkeley, U.S.A.

Singh, B (1974). Impact of Education on Farm Production. *Economic and Political Weekly,* 9(39): September, 28.

Tilak Jandhyala, B G (1993). Education and Agricultural Productivity in Asia: A Review. *Indian Journal of Agricultural Economics,* 48(2): 187 - 200.

Welch, F (1970). Education in Production. Journal of Political Economy, 78(1): January - February.

Wharton, Jr., C R (1965). The Role of Education in Early Stage of Agriculture. In C A Anderson and M.J. Bowman (Eds.) (1965), Education and Economic Development, Aldine, Chicago, U.S.A.

Notes:

[1] A study by Singh (1974) reveals that higher the level of education, farm production will be higher. One more study by Evenson and Jha (1973) reveals that the productivity of research would be much lower if extension were not undertaken.

[2] It will be necessary to understand here that education considered by Jamison and Moock (1984, p.68), Welch (1970) and Schultz (1975) is not necessarily a combination of basics and skills, but a homogeneous impacting variable.

[3] There are five states in the country viz., Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu and Kashmir having sericulture as an important economic activity. Eight states have taken up sericulture on a pilot basis and have achieved some progress.

[4] The *chandrikes* are made out of bamboo and cost about Rs150 each. From each *chandrike* about 1.25 kgs of cocoons can be harvested. Therefore, per 100 DFLs about 40 *chandrikes* are required to mount the worms on the chandrikes. It is difficult for the marginal and small farmers to buy these and therefore the chandrikes are hired by these categories. The owners of these exploit the marginal and small farmers by charging a higher rate of rent.

[5] Most of the marginal and small farmers do not have enough space to keep the silkworm mounted chandrikes, which results in wastage of cocoons during hot summer and also rainy seasons. And also there are chances of losing the cocoons due to dogs, ants and monkeys as these are fond of the ripped silkworms.

[6] According to the 1991 census the total number of HHs were 345 and 175 in Kuruburu and Nayakarahalli respectively.

[7] Per acre of mulberry garden, farmers brush about 250 Diseased-Free-Layings (DFLs Silkworm eggs) per crop. In a year farmers can take five crops as the mulberry can be harvested five times

a year. Each 100 DFLs costs about Rs300 to even Rs600. The variation is because of the demand during summer. The price per kg of cocoons is around Rs125. Therefore the increase in yield of about 10 kgs, per 100 DFLs makes them earn about Rs9,375 just by taking on an average of three successful crops in a year.

[8] The rearing of young silkworms is called chawkie rearing. This is a crucial stage in silkworm rearing as the success of the crop and cocoon yield depends on the quality of chawkie rearing. Most of the marginal and small farmers find it difficult to rear the chawkie under ideal conditions as they do not have a separate rearing shed and therefore more chances of contamination and in turn losing the crop.

[9] The silkworms are affected by four diseases namely Mascardine during winter season, Flacherie mostly during rainy season, Grossarie during summer and Pebrine mostly during summer but there are also chances of getting them during all the seasons.